View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by Lancaster E-Prints

Psychological mechanisms and the ups and downs of personal recovery in bipolar disorder

Alyson L. Dodd*[1, 2], Barbara Mezes[2], Fiona Lobban[2] and Steven H. Jones[2]

[1] Department of Psychology, Faculty of Health & Life Sciences, Northumbria University, Newcastle-upon-Tyne, United Kingdom

[2] Spectrum Centre for Mental Health Research, Division of Health Research, Faculty of Health & Medicine, Lancaster University, Lancaster, United Kingdom

*Requests for reprints should be addressed to Dr Alyson Dodd, Department of Psychology, Northumberland Building, Northumbria University, Newcastle-upon-Tyne, United Kingdom (e-mail: alyson.dodd@northumbria.ac.uk.

Abstract

Background: Personal recovery is recognised as an important outcome for individuals with bipolar disorder (BD), and is distinct from symptomatic and functional recovery. Recovery-focused psychological therapies show promise. As with therapies aiming to delay relapse and improve symptoms, research on the psychological mechanisms underlying recovery is crucial to inform effective recovery-focused therapy. However, empirical work is limited. This study investigated whether negative beliefs about mood swings and self-referent appraisals of mood-related experiences were negatively associated with personal recovery.

Design: Cross-sectional online survey.

Method: People with a verified research diagnosis of BD (n = 87), recruited via relevant voluntary sector organisations and social media, completed online measures. Pearson's correlations and multiple regression analysed associations between appraisals, beliefs and recovery.

Results: Normalising appraisals of mood changes were positively associated with personal recovery. Depression, negative self-appraisals of depression-relevant experiences, extreme positive *and* negative appraisals of activated states, and negative beliefs about mood swings had negative relationships with recovery. After controlling for current mood symptoms, negative illness models (relating to how controllable, long-term, concerning, and treatable mood swings are; β = -.38), being employed (β = .39) and both current (β = -.53) and recent experience of depression (β = .30) predicted recovery.

Limitations: Due to the cross-sectional design, causality cannot be determined. Participants were a convenience sample primarily recruited online. Power was limited by the sample size.

Conclusions: Interventions aiming to empower people to feel able to manage mood and catastrophise less about mood swings could facilitate personal recovery in people with BD, which might be achieved in recovery-focused therapy.

Practitioner Points

- Personal recovery is an important outcome for people living with bipolar disorder
- More positive illness models are associated with better personal recovery in bipolar disorder, over and above mood symptoms
- Recovery-focused therapy should focus on developing positive illness models
- Recovery-focused therapy should address personally meaningful goals such as gaining employment

Introduction

The generic cognitive model (GCM) of psychopathology has been empirically validated over more than 50 years (A. T. Beck & Haigh, 2014). Its central tenet is that information processing biases underlie psychopathology, characterised by a vicious cycle of dysfunctional thinking that effects mood and behaviour, which reinforces dysfunctional thinking. Influenced by this, disorder-specific cognitive models recognise that multifaceted psychological processes are likely to contribute to the development and recurrence of distress, such as threat appraisals in anxiety (A. T. Beck & Clark, 1997), and negative beliefs in depression (A. T. Beck, 2008). Support for these models has come from investigations of theory-driven associations between putative maintaining processes and outcomes (for reviews with clinical implications, see Clark, 1999; Gotlib & Joormann, 2010). The cognitive and behavioural processes at the centre of the GCM have also informed transdiagnostic approaches to understanding and treating psychological disorders (Mansell, Harvey, Watkins, & Shafran, 2009). The development and refinement of cognitive models has identified candidate mechanisms of change (mediators of outcomes) for cognitive-behavioural therapy (CBT), which aims to modify the types of dysfunctional thinking styles that are associated with outcomes (J. S. Beck, 2011). CBT has a promising evidence-base for depression and anxiety (Cuijpers, Cristea, Karyotaki, Reijnders, & Huibers, 2016), and a burgeoning evidence-base for bipolar disorder (BD), although few trials have investigated functional outcomes in BD (Oud et al., 2016).

As with the GCM and models of other psychological disorders, a cycle of beliefs and appraisals of mood, and resultant emotion regulation or coping strategies, is at the centre of the development and recurrence of mood episodes in cognitive models of mood swings and bipolar disorder (BD). Specifically, Jones' (2001) multilevel cognitive model of BD suggested that when people make either very positive or negative internal attributions of mood changes arising from circadian rhythm disruptions, their behavioural responses ultimately exacerbate mood symptoms. Mansell et al's (2007) Integrative Cognitive Model (ICM) of mood swings proposed that extreme, self-referent positive and negative appraisals of internal states (mood, cognition, arousal) create internal conflict, influence behaviour, and interfere with mood regulation. The Hypomanic

Interpretations Questionnaire (HIQ; Jones, Mansell, & Waller, 2006), Interpretations of Depression Questionnaire (IDQ; Jones & Day, 2008), and Hypomanic Attitudes and Positive Predictions Inventory (HAPPI; Mansell, 2006) are theory-driven measures of these types of appraisals relevant to BD.

The Self-Regulation Model (SRM) is similar such that it postulates that illness perceptions (beliefs people hold about the perceived consequences, controllability, and causes of experiences) of both physical illness (Leventhal, Nerenz, & Steele, 1984) and mental health (Lobban, Barrowclough, & Jones, 2003) drive coping strategies that impact on symptoms and functioning. The Brief Illness Perception Questionnaire (BIPQ; Broadbent, Petrie, Main, & Weinman, 2006) was adapted to measure these cognitive representations (or illness models) of mood swings in BD (Lobban, Solis-Trapala, Tyler, Chandler, & Morriss, 2012).

There are clear similarities between these cognitive conceptualisations of mood swings and the measures derived from them. As with conditions such as anxiety and depression (Clark, 1999; Gotlib & Joormann, 2010), research focusing on how these internal psychological processes relate to clinical outcomes and functioning among people with BD has provided empirical support for these models. Extreme appraisals of internal states and negative illness models (beliefs about mood swings) are associated with more severe symptoms and poorer functioning (Dodd, Mansell, Morrison, & Tai, 2011; Jones et al., 2006; Lobban, Solis-Trapala, et al., 2012).

These outcomes are related to, but separable from, personal recovery (Jones, Mulligan, Higginson, Dunn, & Morrison, 2013). Empirical understanding of which psychological processes underpin recovery is limited by comparison, despite recovery being increasingly recognised as a valued outcome for those with BD (Jones et al., 2013) and other conditions (e.g., psychosis; Neil et al., 2009). Recovery is associated with positive experiences of mental health services (Green et al., 2013), and is a priority in UK policy and clinical guidance (e.g., Department of Health, 2011; National Institute for Health and Care Guidance, 2014) for NHS services. A systematic review suggested that more research is needed on recovery processes (Leamy, Bird, Le Boutillier, Williams,

& Slade, 2011). Understanding the psychological processes underpinning the experience of personal recovery is important for informing and refining recovery-focused psychological therapies, which have demonstrated promise (Jones et al., 2015).

The Bipolar Recovery Questionnaire (BRQ; Jones et al., 2013) was developed in collaboration with people with lived experience of BD to address the issue of how to measure personal recovery quantitatively. Recovery was positively associated with well-being and post-traumatic growth (especially feeling able to manage personal struggles). Recovery was also positively associated with functioning and inversely associated with mood symptoms, while not being solely artefactual of either, demonstrating it is an important and distinct outcome. The BRQ has also been utilised as a meaningful outcome measure in therapy (Jones et al., 2015; Todd, Jones, Hart, & Lobban, 2014).

This research will build on theory and evidence suggesting that psychological mechanisms (specifically the ways in which people with BD interpret their mood experiences) impact outcomes, by exploring whether this extends to personal recovery. It was hypothesised that having negative illness models (BIPQ), and extreme self-referent appraisals to internal states (positive and negative; HIQ, IDQ, and HAPPI), would be associated with diminished personal recovery. Normalising appraisals were expected to be associated with enhanced recovery. This study also investigated whether these associations were independent of mood symptoms, and clinical and demographic characteristics.

Method

Participants

Individuals who identified as having BD were recruited via Twitter, a panel of individuals who had expressed an interest in taking part in research on BD, and the voluntary sector (e.g., Bipolar UK and the National Survivor User Network). Potential participants were invited to click a link to the online participant information sheet and consent form. Inclusion criteria were: aged >18 years; UK-based; self-reported diagnosis of BD *plus* a research diagnosis of BD, confirmed via the Structured

Clinical for the Diagnostic and Statistical Manual of Mental Disorders (First, Spitzer, Williams, & Gibbon, 2002). Power calculation for multiple regression using G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) indicated that a sample size of $n = 109$ was required for a medium effect size (0.15), power = 0.8 and significance level $p < 0.05$. One hundred and eighty-four unique consents were provided online.

Measures

Table 1 demonstrates that the measures used are psychometrically sound. Principal components analyses (PCA) support the structure of the subscales used here. Where applicable, Cronbach's alpha for subscales have been examined after PCA, given dimensionality affects alpha, but alpha does not tell us about dimensionality (Cortina, 1993). Internal consistency alone does not demonstrate measures are assessing the constructs intended (Cortina, 1993); the construct, clinical and predictive validity of scales used here have been demonstrated via associations with relevant measures of cognitive style, functioning and mood, and their ability to discriminate those with BD or manic symptoms.

[INSERT TABLE 1 HERE]

Demographic information. Participants were asked to record their age, gender, ethnicity, education, employment, and clinical history (formal diagnosis yes/no, years since diagnosis, and medication yes/no).

Personal recovery.

Bipolar Recovery Questionnaire (BRQ; Jones et al, 2013). The BRQ asks participants to rate statements such as "I am able to engage in a range of activities that are personally meaningful to me" from 0="Strongly disagree" to 100="Strongly agree". Items were developed with service users informed by qualitative interviews concerning definition and experience of personal recovery from the perspective of those living with BD. Higher scores indicate better recovery.

Mood.

SCID (First et al., 2002). The SCID interview Modules A (Mood Disorders) and B (Psychotic Symptoms) were used to verify research diagnosis via telephone interview, which has been found to be an acceptable alternative (Hajebi et al., 2012).

Altman Self-Rating Mania Scale (ASRM; Altman, Hedeker, Peterson, & Davis, 1997). The ASRM was used to assess current manic symptoms and comprises five groups of items asking about the frequency of symptoms during the past week. Two of three components from a principal components analysis were discarded by the original authors, as only the mania scale could discriminate currently manic from non-manic participants (sensitivity = 85.5 and specificity = 87.3; Altman et al., 1997). Higher scores indicate more manic symptoms.

Center for Epidemiologic Studies – Depression scale (Radloff, 1977). The CES-D asks about the experience of depressive symptoms over the previous week. Participants rate 20 items such as "I felt that I could not shake off the blues even with help from my family or friends" on a scale where 0="Rarely (less than a day)", 1="Sometimes (1-2 days)", 2="Occasionally (2-4 days)", and 4="Most of the time (5-7 days)". A total score is recommended for use by the original authors, and higher scores indicate more severe depression.

HIQ-Experience and IDQ-Experience. On the HIQ and IDQ, in addition to the positive/negative self-appraisal and normalising appraisals of hypomania and depression-relevant experiences, participants indicated whether they had these experiences in the preceding three months. Higher scores indicate more hypomanic (HIQ-Exp) or depressive symptoms (IDQ-Exp) were recently experienced.

Appraisals and beliefs about mood swings.

Hypomania Interpretations Questionnaire (HIQ; Jones, Mansell, & Waller, 2006). This 10-item scale asks participants to endorse i) positive self-appraisals (HIQ-H) and ii) normalising appraisals (HIQ-N) of the same hypomania-relevant experience e.g., "If my thoughts were coming so thick and fast that other people couldn't keep up, I would probably think it was because…"; "I am full of good ideas and others are too slow" (HIQ-H) and "There are too many demands on my time"

(HIQ-N). Appraisals are rated from A="Not at all" to D="A great deal". These subscales were confirmed through principal components analysis (Jones et al., 2006). Higher scores on HIQ-H and HIQ-N mean stronger belief in those types of appraisals.

Interpretation of Depressive Experiences Questionnaire (IDQ; Jones & Day, 2008). This 10-item scale mirrors the HIQ but asks participants to endorse appraisals of depressive symptoms e.g., "If I felt cut off from other people I would probably think it was because…" i) "I am an insensitive person" (negative self-appraisal; IDQ-D) and ii) "Things are difficult at the moment and I have little energy for other things" (normalising appraisal; IDQ-N)." These subscales were confirmed through principal components analysis (Jones & Day, 2008). Scoring mirrors the HIQ, and higher scores indicate stronger belief in appraisals (IDQ-D and IDQ-N).

Hypomanic Attitudes & Positive Predictions Inventory (HAPPI; Dodd, Mansell, Sadhnani, Morrison, & Tai, 2010; Mansell, 2006). The 61-item HAPPI measures negative (e.g., "Unless I am active all the time, I will end up a failure") and positive (e.g., "When I feel restless, the world becomes full of unlimited opportunities for me") appraisals of internal states on a scale from 0 = "I don't believe this at all" to 100 = "I believe this completely". An overall mean score is typically used, with higher scores indicating greater endorsement of both positive and negative appraisals of internal states, considered particularly problematic for people with BD (Mansell et al., 2007).

Brief Illness Perception Questionnaire (BIPQ; Lobban et al, 2013). The original BIPQ (Broadbent et al., 2006) was modelled on the longer Illness Perceptions Questionnaire – Revised (Moss-Morris et al., 2002), with each individual item corresponding to a factor derived through factor analysis of the IPQ-R (cognitive and emotional representations of illness e.g., consequences, control, and concern). Lobban et al (2013) adapted the BIPQ for BD such that the eleven items were worded to ask about peoples' beliefs about mood swings. It is measured on a scale from 0-10; for some items, higher scores equal more negative beliefs (e.g., "How much do mood swings affect your life?" is rated from 0 = "no affect at all" to 10 = "Severely affects my life"), whereas for other items higher scores represent more positive beliefs (e.g. "How much control do you feel you have over your mood

swings?" is rated from 0 = "absolutely no control" to 10 = "total control"). The single item structure has pragmatic advantages such as brevity for use in clinical settings and larger batteries of questionnaires, and was designed to be adapted for use with different conditions (Broadbent et al., 2006). BIPQ has been used and validated widely (Broadbent et al., 2015). Table 1 gives psychometric properties for the version for BD (Lobban, Solis-Trapala, et al., 2012). The developers have stated that total scores can also be used (Broadbent et al., 2015). Positively-worded responses are reverse-scored before summing, so higher scores indicate a negative illness model.

Procedure

Ethical approval was given by X University Research Ethics Committee. The study was promoted on social media (primarily Twitter), in local meetings and newsletters of voluntary sector organisations (e.g., Bipolar UK and the National Survivor User Network) and a participant panel of people with BD. Advertisements included a link to the online information sheet and consent form, hosted by Lime Survey. As part of the consent procedure, participants consented to participate in a SCID after completion of the questionnaires. They were also asked whether they consented for SCID data gathered during previous research participation with the same team to be used to verify research diagnosis for the current study (where applicable). When consent had been given, participants completed a demographic questionnaire, which asked them to confirm they had received a diagnosis of BD. Participants were then emailed out a unique link to the online survey, which comprised all self-report measures. Further questionnaires not relevant to this study were also completed. As a test of response validity, four 'catch items', or 'attention filters', were added. Participants were asked to give a specific answer (e.g., "please respond '50' here"). It was decided prior to data collection that any participant who answered every catch item incorrectly would be excluded from primary analyses as this could indicate fatigue or inattentive responding. Marginally correct answers (+/- 1 point on the scale) were allowed.

Once the survey had been completed, participants were thanked and debriefed, and invited to affirm consent to take part in the SCID. One Research Associate (RA) arranged and conducted all

telephone SCID. They completed a SCID training programme that included watching DVDs produced by the American Psychiatric Association for this purpose, shadowing a trained researcher and scoring alongside them to look at inter-rater reliability, and doing practice interviews with a clinical psychologist and an individual with lived experience of BD. The latter was recorded and a research-active clinical psychologist independently rated this, compared scoring for inter-rater reliability, and provided feedback. The RA also attended monthly clinical skills training and regular supervision with experienced clinical psychologists and academics based within a research centre with expertise in BD.

In line with X routine research practice, every participant who took part in a telephone interview was offered a follow-up phone call 24 hours later, in case of any distress following the SCID. Participants were paid £5 upon completing the online survey, and a further £5 for completing the SCID.

Data Analysis

Data were analysed using SPSS (version 22). Individual items were forced response, so there were no missing data. To test for potential covariates, relationships between recovery and demographic and clinical variables were explored. Independent t-tests were conducted to check whether recovery differed by gender, employment status, or taking medication for BD. Pearson's correlations tested associations between recovery, age, years since diagnosis, and mood symptoms.

For primary analyses, Pearson's correlations were conducted to test theory-driven hypotheses that psychological processes would be associated with personal recovery. This allowed us to identify variables that had a relationship with recovery to include as predictors in the multivariate analysis. Hierarchical multiple regression with personal recovery as the dependent variable was conducted to control for potentially confounding demographic and clinical variables that may be having an influence on recovery in step one, while testing the unique contribution of specific, theory-driven predictors of interests (appraisals and beliefs) to the model in step two. Statistical significance was set at $p < 0.05$ as per the power analysis. To control for Type I error while not compromising power and reducing the likelihood of Type II error, the sequential Holm-Bonferroni correction (Holm, 1979) was

applied for each set of hypothesis-driven tests. Findings that were non-significant using the adjusted alpha level are highlighted in results tables.

Results

Descriptive Statistics

Participant characteristics. Closing the web browser before completing the survey was regarded as withdrawing, so non-completers were excluded. Of the 184 who consented, 127 completed the online survey. SCID data were unavailable for 40 participants who did not affirm consent to interview, or were lost to follow-up. Eighty-eight took part in a SCID and all of these met research diagnostic criteria for BD and were retained. One participant answered every catch item incorrectly and was removed from the analysis. In the final sample (N = 87), 89.7% answered all items correctly, 8% three items, and 2.3% two items.

The mean age was 44.46 years (SD = 12.16), and n = 60 (69%) were female. The majority identified as White British (n = 81; 93.1%), with n = 4 (4.6%) Other White, and n = 1 (1.1%) for each of Black British and Mixed. Around half were currently employed (n = 41; 47.1%). Of those not working, n = 34 (73.9%) had left employment due to mental health problems. N = 2 (2.3%) had no formal qualifications, n = 14 (16.1%) CSE/O Level/GCSE or equivalent (undertaken at approximately 16 years of age in UK), n = 15 (17.2%) had completed A Levels or equivalent (approximately 18 years of age in UK), n = 28 (32.2%) had a degree, and n = 28 (32.2%) completed postgraduate study.

The majority (n = 72; 82.8%) reported currently taking medication for BD. Mean time since diagnosis was 10.03 years (SD = 8.51). SCID diagnosis was as follows; n = 55 (63.2%) had BD-I, n = 29 (33.3%) BD-II, n = 2 (2.3%) cyclothymia, and n = 1 (1.1%) bipolar not otherwise specified.

Psychological processes, mood and recovery. Descriptive statistics and internal consistencies are displayed in Table 2. Means and Cronbach's alpha for measures of recovery and psychological processes were comparable to those reported in initial development and validation papers (Dodd et al., 2011; Jones & Day, 2008; Jones et al., 2006; Jones et al., 2013; Lobban, Solis-

Trapala, et al., 2012). The sample had a high mean score for depression (given CES-D cut-off is 16; Radloff, 1977) and a low mean for manic symptoms (ASRM cut-off = 5; Altman et al., 1997).

[INSERT TABLE 2 HERE]

Correlations between recovery, participant characteristics, and mood

Neither age (r = -.04) or years since diagnosis (r = .18) were significantly correlated with personal recovery. Independent sample t-tests indicated significantly higher personal recovery in those in work (M = 2381.0, SD = 428.3) compared to those not working (M = 2076.7, SD = 514.9), t (85) = -2.98, $p < 0.05$), and no differences by gender (t(85) = -0.5, *ns)* or current medication use (t(85) = 0.98, *ns)*. ANOVA indicated that there were no significant differences across education level (F = 1.1, *ns*). Table 3 shows negative correlations between recovery and both current (CES-D) and recent (IDQ-Exp) depression. Recovery was not correlated with current (ASRM) or recent (HIQ-Exp) hypomania (in the context of low mania scores).

[INSERT TABLE 3 HERE]

Relationships between recovery, mood, and psychological processes

Correlations. Table 3 shows current depression was positively correlated with IDQ-N, BIPQ and HAPPI. Current mania was not significantly correlated with any psychological process variable. There were negative associations between personal recovery and BIPQ, IDQ-D, and HAPPI. IDQ-N and HIQ-N were positively associated with recovery. HIQ-H, and current as well as recent experience of manic symptoms, were not associated with recovery. Effect sizes for significant correlations were medium to large (Cohen, 1988).

Hierarchical multiple regression analysis. See Table 4 for full results. Current and recent depression, and employment, were entered in step one as all were potential confounds due to their significant associations with personal recovery; R^2 = .52, $p < 0.001$. Being in employment and recent depression were positively associated with personal recovery, while current depression was negatively associated. In addition to these predictors, the key psychological process variables of

interest that also significantly correlated with recovery were entered in step 2, which contributed an additional 16% to the variance in recovery ($\Delta R^2 = .16$, $p < 0.001$). Significant associations from step 1 were upheld. Of the psychological process variables, BIPQ had a significant, negative association. BIPQ was the second most important predictor after current depression, with recovery increasing by 0.53 *SD* if depression decreased by one *SD,* and recovery increasing by 0.38 *SD* if BIPQ decreased by one *SD*. This would mean an improvement in recovery of 264 and 189, respectively.

[INSERT TABLE 4 HERE]

Exploratory analysis: Associations between recovery and specific beliefs about mood swings. Table 5 shows correlations between each individual BIPQ item and personal recovery. Items representing positive beliefs about mood swings were positively correlated with recovery, while items representing negative beliefs about mood swings were negatively associated with recovery (e.g. "Do you ever think you are to blame for your mood swings?") Exceptions that did not have significant correlations with personal recovery were attributing causality for mood swings to your own behaviour, believing mood swings will last a long time, and having less understanding (illness comprehensibility) about mood swings.

[INSERT TABLE 5 HERE]

Discussion

Previous research has identified that self-esteem, post-traumatic growth and stigma are important for mental health recovery (Jones et al., 2013; Leamy et al., 2011). Building on these findings, and findings that appraisals of internal states and beliefs about mood are associated with poorer clinical and functional outcomes in bipolar disorder (e.g., Dodd et al., 2011; Lobban, Solis-Trapala, et al., 2012), this study explored how these more specific psychological processes underlie recovery.

Findings provided preliminary support for theoretical frameworks that emphasise peoples' interpretations of their mood as underpinning mechanisms for outcomes in BD (Jones, 2001; Mansell

et al., 2007). Correlations broadly supported the hypothesis that psychological processes associated with increased mood symptoms and poorer functioning would also be negatively associated with recovery among people with BD. Extreme appraisals of internal states (primarily of activated mood) and negative self-appraisals relating to depressed mood were negatively correlated with recovery, as were beliefs about mood swings representing a negative illness model. Normalising appraisals of elevated and depressed mood were positively correlated with recovery. When controlling for depression, clinical history and employment status, negative illness models independently predicted recovery. This effect was robust to *p*-value adjustments calculated due to multiple comparisons. Decreasing negative beliefs by one *SD* was estimated to increase BRQ score by 189. This appears meaningful given the difference in mean BRQ score in the therapy group compared to treatment as usual was around 300 in pilot evaluations of face-to-face recovery-focused therapy (RfT; Jones et al., 2015) and online self-management for people who identified as having BD and had a positive MDQ screen (Todd et al., 2014).

The BIPQ assesses to what extent people believe their mood swings can be controlled by personal effort or treatment, how much they understand mood swings, how much of an impact their mood swings have on their lives, how much they are to blame for their own mood swings, how severe the consequences of mood swings are, and how much of an emotional response they have to mood swings. While not all BIPQ items were significantly related to recovery (particularly when correcting for multiple comparisons), exploratory analyses provided further tentative support for the role of these types of beliefs in recovery by identifying that specific BIPQ items indicating positive illness models enhanced recovery, while items indicating negative illness models were related to diminished recovery. These findings corroborate the initial validation of the BRQ (Jones et al., 2013), where coping and confidence in one's own resources were associated with recovery. Similar findings have been reported in psychosis, such that greater self-esteem and less hopelessness predicted recovery longitudinally (Law, Shryane, Bentall, & Morrison, 2015). These findings also corroborate qualitative research that suggest normalising mood swings, "going with the flow" and self-management are all important for staying well (Russell & Browne, 2005; Seal, Mansell, & Mannion, 2008), and that

people with BD can have positive beliefs about their mood swings that promote better outcomes (Forgeard et al., 2016; Lobban, Taylor, Murray, & Jones, 2012).

Positive and negative appraisals of internal states relevant to high and low mood are elevated among individuals with BD and have been associated with manic and depressive symptoms in this study and previous research (Banks, Lobban, Fanshawe, & Jones, 2016; Dodd et al., 2011; Jones & Day, 2008; Jones et al., 2006; Mansell et al., 2011). However, these self-appraisals were not associated with recovery when controlling for symptoms. It is possible that different cognitive processes hinder the experience of recovery as compared to those that underlie the development and maintenance of mood symptoms. There are important differences between the process measures and the constructs they tap into. The BIPQ assesses a wide range of beliefs relating to the experience of BD; about the longer-term impact and causes of mood swings, their pervasiveness, and how controllable they are through personal effort and treatment. The HIQ focuses on hypomania-relevant experiences (racing thoughts, increased energy) and asks people how likely they would be to attribute these experiences to positive aspects of themselves ("I am a talented person with lots to offer") or situational factors ("Things happen to be going well for me at the moment"), with the former expected to relate to mania risk and BD. The IDQ measures negative self-appraisals of depression-relevant experiences, for example attributing upsetting, pessimistic thoughts and feeling down to self-referent reasons ("I don't get pleasure from anything anymore") as opposed to normalising appraisals of these same experiences ("Current pressures are distracting me from my interests"). The HAPPI measures a range of extreme, positive and negative appraisals of internal states relevant to BD, particularly increased activation and energy. Negative appraisals of feeling activated include critical thoughts about the self, perceived criticism from others, and signalling loss of control. These same activated states can also be appraised positively, whereby activation can signal imminent success, goal achievement, and high self-worth.

As such, appraisals of internal states and mood may be more relevant for mood regulation than the experience of recovery. Specifically, positive appraisals may be more relevant for the exacerbation and maintenance of manic symptoms by prompting attempts to upregulate mood.

Similarly, negative self-appraisals may exacerbate depressive symptoms without having a direct influence on personal recovery. Importantly, this was the first research to report an association between depression and negative self-appraisals of low mood in a clinical population, replicating work in an analogue sample (Jones & Day, 2008). There is a certain degree of overlap between negative self-appraisals and symptoms (I am worthless; nothing will work out for me; I feel down), which may explain the lack of association between recovery and these appraisals when controlling for current depression. These are tentative interpretations, given the sample may have been too small to detect these associations.

In line with findings that negative emotion predicts lower subjective recovery in psychosis (Law et al., 2015) and the initial validation of the BRQ (Jones et al., 2013), depressive symptoms, but not manic symptoms, were negatively related to personal recovery. Self-reported manic symptoms have not been consistently associated with recovery (Jones et al., 2013), and were not significantly improved in recovery-focused therapy for BD (although observer-rated time to manic relapse was longer among those who received this therapy; Jones et al., 2015). It is important to note that while the mean for manic symptoms was below the cut-off (Altman et al., 1997), the mean for depression was high (Radloff, 1977), indicating that this sample may be primarily characterised by depressive symptoms. This could go some way towards explaining null findings as well as mixed findings for recent depression; having recently experienced depression had the expected negative correlation with recovery, but when controlling for current symptoms, recent depression had a *positive* association with recovery.

Looking at demographics, being employed was associated with personal recovery in this study. Two thirds of those currently not working reported this was due to mental health difficulties. It is difficult to know whether feeling more recovered means people are more likely to be in work or vice versa. This study offers tentative evidence that functional outcomes that are more proximal are more important for recovery; distal outcomes such as educational achievement was not related to recovery (the mean age of this sample indicated most would have completed their education at the time of taking part). In a final point, age and time since diagnosis were not significantly related to

recovery, which supports the adaptation of recovery-focused therapy for early-onset BD (Jones et al., 2015) for those at different illness stages.

Limitations & Future Directions

Those who participated in the SCID completed the mood and psychotic symptoms modules only, and therefore data on comorbidities is not available for comparison with samples in different studies. In addition, one RA conducted all interviews. Observer-rated mood status was not determined at the time of undertaking the survey, so current mood measures are self-report. For this study, participants were not required to be euthymic, and many scored above depression cut-offs. Subsyndromal depressive symptoms are common in BD and have an impact on functional outcomes (Samalin, de Chazeron, Vieta, Bellivier, & Llorca, 2016), so this is in line with the clinical picture for BD. To address this, current depression was controlled for.

While this research generalised beyond the North West of England, the region focused on in the original BRQ paper (Jones et al., 2013), the sample were still predominately white and UK-based. While widening access to participation nationally, recruitment via social media and the voluntary sector may have further reduced generalisability of findings. The proportion with BD-II was high compared to other studies, and overall this was a high functioning sample.

Given the sample size and potential for Type I error, we were unable to include separate subscales of the HAPPI and BIPQ in the regression. It would be interesting to test whether specific types of appraisal and beliefs were associated with recovery when controlling for symptoms and other potential confounds. While independent variables were carefully considered based on theory and past research, there were multiple comparisons due to multiple variables of interest as well as the need to control for potentially confounding clinical and demographic variables. As the Bonferroni correction has been questioned for being overly conservative (Cumming, 2013; Nakagawa, 2004; Perneger, 1998), multiple comparisons were controlled for using the sequential Holm-Bonferroni correction. As this was the first exploration of relationships between these psychological processes and recovery, we have also reported unadjusted *p*-values. However, the study was under-powered due to loss of over

30% of the initial sample between survey and SCID. The target sample size for recruitment should have allowed for this drop-out rate in order to achieve the sample size required as per the power calculation. Notably, effect sizes were medium to high, and the power calculation was based on finding a small effect size with a larger number of tested predictors than the final model reported here, as it conservatively allowed for all potential predictors (including psychological processes and potentially confounding demographic and clinical variables). Regardless, due caution must be applied to interpretation of findings, which are interesting but preliminary.

As with all associations in this cross-sectional study, the direction of the significant relationship between being in employment and recovery cannot be determined. It is not possible to determine whether being in work promotes personal recovery, or whether feeling more recovered means someone is more likely to pursue and secure employment. In other words, being in employment could be a part of recovery (Tse, Chan, Ng, & Yatham, 2014). There was no measure of how satisfied participants were with their employment, so while we assume that this is a positive outcome, participants may not feel they have achieved employment commensurate with their skills and experience; the majority of those currently out of work attributed this to their mental health.

Further work is needed to develop a psychological model of personal recovery. This research suggests that beliefs about mood swings may be a maintaining process in such a model, alongside clinical factors and life circumstances, with different psychological factors potentially underpinning mood symptoms and feelings of recovery. However, although appraisals were not uniquely associated with recovery in the present research, it would be premature to disregard their role in recovery given the study limitations outlined above and their association with mood symptoms. Although they are distinct outcomes, recovery and mood symptoms are strongly linked, in particular depression (Jones et al., 2013; Law et al., 2015). The current study builds on previous research towards building a preliminary recovery-focused model of BD where appraisals disrupt mood over time, which has a reciprocal impact on the development and maintenance of overarching negative beliefs about the nature of mood swings. These negative illness models of BD then impede the experience of personal recovery.

It is also likely that further processes not examined here are involved in the pathway to recovery. Future research should include factors that theory and evidence suggest either help or hinder personal recovery in severe mental illness, such as post-traumatic growth, self-esteem, hope and stigma (Morrison et al., 2016). The model tested here focused on peoples' current beliefs about their experiences, yet for moving towards better recovery, it is likely that instilling self-efficacy will be crucial for changing these beliefs about how catastrophic and uncontrollable mood swings are, and this should be explored. Processes to be identified in ongoing qualitative work are also of interest for future quantitative research. Further processes that disrupt mood in BD could be explored in relation to recovery, such as goal dysregulation (Johnson, Fulford, & Carver, 2012), coping strategies (Lam & Wong, 2005), and unstable sleep/social rhythms (Harvey, 2008). These are often targeted in existing psychological approaches (Oud et al., 2016), including, although to a lesser extent, RfT (Jones et al., 2015; Tyler et al., 2016). It is also important to explore recovery and RfT across the lifespan, including those with established BD and older adults (Tyler et al., 2016). In addition, culturally diverse samples are vital so that these treatment models are more externally valid and, crucially, more relevant to promoting recovery in a wider range of people.

In order to achieve an adequate sample to test a multifaceted psychological model of recovery, future research should allow for drop-out between different stages of the protocol by recruiting larger, as well as more diverse, samples. In particular, longitudinal research using statistical modelling techniques is required to disentangle these relationships and investigate which psychological processes predict change in recovery over time.

Clinical Implications

Clinical guidelines for the treatment of BD in the UK (produced by National Institute for Health and Care Guidance, 2014) recommend promoting recovery from time of diagnosis. They also recommend further research on interventions that enhance not just clinical, but also personal, recovery, particularly for bipolar depression. Most CBT models focus on symptoms, so this is an important step towards building a recovery-focused CBT model. This is not to say that recovery

cannot be an outcome for interventions focused primarily on ameliorating symptoms. For example, in recognition that mood management is likely to facilitate recovery (Mueser et al., 2002), existing self-management and relapse prevention approaches have included recovery as an outcome (e.g., Lobban et al., 2015; McGuire et al., 2014). Explorations of the extent to which standard CBT and third wave therapies such as mindfulness-based cognitive therapy might have benefits for personal recovery are desirable (Murray et al., 2017).

An important aspect of adapting CBT for facilitating recovery is likely to be the relative balance towards wider recovery goals and narrower mood management goals at each stage. As it stands, RfT is an individualised approach that emphasises service users' own models of BD and personally meaningful goals, with promising results in people with recent onset BD (Jones et al., 2015). Our findings suggest that understanding what mood swings mean to people with these experiences is potentially important for recovery. Further development and evaluation of RfT should target these types of beliefs and variables elucidated through further research as suggested above, and include analyses investigating whether psychological processes mediate improvements in recovery after therapy.

Conclusions

Using a regression-based model, this research suggests that a number of psychological and functional processes, including employment, depression, and cognitive representations of mood swings (illness models), are potentially important for personal recovery. Findings relating to the factors underlying personal recovery have important clinical implications, informing models of how psychological processes and life circumstances (such as employment) interact to promote or hinder recovery, and how they are best targeted in psychological therapies to improve personal recovery. Further research and therapy evaluations are vital as enhancing recovery is a priority for people with BD and clinical services.

References

Altman, E. G., Hedeker, D., Peterson, J. L., & Davis, J. M. (1997). The Altman Self-Rating Mania Scale. *Biological Psychiatry, 42*(10), 948-955. doi:http://dx.doi.org/10.1016/S0006-3223(96)00548-3

Banks, F. D., Lobban, F., Fanshawe, T. R., & Jones, S. H. (2016). Associations between circadian rhythm instability, appraisal style and mood in bipolar disorder. *Journal of Affective Disorders, 203*, 166-175. doi:http://dx.doi.org/10.1016/j.jad.2016.05.075

Beck, A. T. (2008). The Evolution of the Cognitive Model of Depression and Its Neurobiological Correlates. *American Journal of Psychiatry, 165*(8), 969-977. doi:10.1176/appi.ajp.2008.08050721

Beck, A. T., & Clark, D. A. (1997). An information processing model of anxiety: Automatic and strategic processes. *Behaviour Research and Therapy, 35*(1), 49-58. doi:http://dx.doi.org/10.1016/S0005-7967(96)00069-1

Beck, A. T., & Haigh, E. A. P. (2014). Advances in Cognitive Theory and Therapy: The Generic Cognitive Model. *Annual Review of Clinical Psychology, 10*(1), 1-24. doi:doi:10.1146/annurev-clinpsy-032813-153734

Beck, J. S. (2011). *Cognitive behavior therapy: Basics and beyond*: Guilford Press.

Broadbent, E., Petrie, K. J., Main, J., & Weinman, J. (2006). The brief illness perception questionnaire. *Journal of psychosomatic research, 60*(6), 631-637.

Broadbent, E., Wilkes, C., Koschwanez, H., Weinman, J., Norton, S., & Petrie, K. J. (2015). A systematic review and meta-analysis of the Brief Illness Perception Questionnaire. *Psychology & Health, 30*(11), 1361-1385. doi:10.1080/08870446.2015.1070851

Clark, D. M. (1999). Anxiety disorders: why they persist and how to treat them. *Behaviour Research and Therapy, 37, Supplement 1*, S5-S27. doi:http://dx.doi.org/10.1016/S0005-7967(99)00048-0

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Hillsdale, N.J.: Erlbaum.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of applied psychology, 78*(1), 98.

Cuijpers, P., Cristea, I. A., Karyotaki, E., Reijnders, M., & Huibers, M. J. H. (2016). How effective are cognitive behavior therapies for major depression and anxiety disorders? A meta-analytic update of the evidence. *World Psychiatry, 15*(3), 245-258. doi:10.1002/wps.20346

Cumming, G. (2013). *Understanding the new statistics: Effect sizes, confidence intervals, and meta-analysis*: Routledge.

Department of Health. (2011). *No health without mental health.* Retrieved from UK:

Dodd, A. L., Mansell, W., Morrison, A. P., & Tai, S. (2011). Extreme appraisals of internal states and bipolar symptoms: The Hypomanic Attitudes and Positive Predictions Inventory. *Psychological Assessment, 23*(3), 635-645. doi:10.1037/a0022972

Dodd, A. L., Mansell, W., Sadhnani, V., Morrison, A. P., & Tai, S. (2010). Principal Components Analysis of the Hypomanic Attitudes and Positive Predictions Inventory and Associations with Measures of Personality, Cognitive Style and Analogue Symptoms in a Student Sample. *Behavioural and Cognitive Psychotherapy, 38*(01), 15-33. doi:doi:10.1017/S1352465809990476

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. doi:10.3758/brm.41.4.1149

First, M., Spitzer, R., Williams, J., & Gibbon, M. (2002). Structured clinical interview for DSM-IV-TR (SCID-I)-research version. *New York, NY: Biometrics Research, New York State Psychiatric Institute*.

Forgeard, M. J., Pearl, R. L., Cheung, J., Rifkin, L. S., Beard, C., & Björgvinsson, T. (2016). Positive beliefs about mental illness: Associations with sex, age, diagnosis, and clinical outcomes. *Journal of Affective Disorders, 204*, 197-204.

Gotlib, I. H., & Joormann, J. (2010). Cognition and Depression: Current Status and Future Directions. *Annual Review of Clinical Psychology, 6*, 285-312. doi:10.1146/annurev.clinpsy.121208.131305

Green, C. A., Perrin, N. A., Leo, M. C., Janoff, S. L., Yarborough, B. J. H., & Paulson, R. I. (2013). Recovery From Serious Mental Illness: Trajectories, Characteristics, and the Role of Mental Health Care. *Psychiatric Services, 64*(12), 1203-1210. doi:doi:10.1176/appi.ps.201200545

Hajebi, A., Motevalian, A., Amin-Esmaeili, M., Hefazi, M., Radgoodarzi, R., Rahimi-Movaghar, A., & Sharifi, V. (2012). Telephone versus face-to-face administration of the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, for diagnosis of psychotic disorders. *Comprehensive Psychiatry, 53*(5), 579-583. doi:http://dx.doi.org/10.1016/j.comppsych.2011.06.001

Harvey, A. G. (2008). Sleep and circadian rhythms in bipolar disorder: seeking synchrony, harmony, and regulation. *American Journal of Psychiatry, 165*(7), 820-829.

Hirschfeld, R. M., Williams, J. B., Spitzer, R. L., Calabrese, J. R., Flynn, L., Keck Jr, P. E., . . . Rapport, D. J. (2000). Development and validation of a screening instrument for bipolar spectrum disorder: the Mood Disorder Questionnaire. *American Journal of Psychiatry, 157*(11), 1873-1875.

Holm, S. (1979). A Simple Sequentially Rejective Multiple Test Procedure. *Scandinavian Journal of Statistics, 6*(2), 65-70.

Johnson, S. L., Fulford, D., & Carver, C. S. (2012). The Double-Edged Sword of Goal Engagement: Consequences of Goal Pursuit in Bipolar Disorder. *Clinical Psychology & Psychotherapy, 19*(4), 352-362. doi:10.1002/cpp.1801

Jones, S. H. (2001). Circadian rhythms, multilevel models of emotion and bipolar disorder—an initial step towards integration? *Clinical Psychology Review, 21*(8), 1193-1209. doi:http://dx.doi.org/10.1016/S0272-7358(01)00111-8

Jones, S. H., & Day, C. (2008). Self appraisal and behavioural activation in the prediction of hypomanic personality and depressive symptoms. *Personality and Individual Differences, 45*(7), 643-648.

Jones, S. H., Mansell, W., & Waller, L. (2006). Appraisal of hypomania-relevant experiences: Development of a questionnaire to assess positive self-dispositional appraisals in bipolar and behavioural high risk samples. *Journal of Affective Disorders, 93*(1), 19-28.

Jones, S. H., Mulligan, L. D., Higginson, S., Dunn, G., & Morrison, A. P. (2013). The bipolar recovery questionnaire: psychometric properties of a quantitative measure of recovery experiences in bipolar disorder. *Journal of Affective Disorders, 147*(1), 34-43.

Jones, S. H., Smith, G., Mulligan, L. D., Lobban, F., Law, H., Dunn, G., . . . Morrison, A. P. (2015). Recovery-focused cognitive–behavioural therapy for recent-onset bipolar disorder: randomised controlled pilot trial. *The British Journal of Psychiatry, 206*(1), 58-66.

Lam, D., & Wong, G. (2005). Prodromes, coping strategies and psychological interventions in bipolar disorders. *Clinical Psychology Review, 25*(8), 1028-1042. doi:http://dx.doi.org/10.1016/j.cpr.2005.06.005

Law, H., Shryane, N., Bentall, R. P., & Morrison, A. P. (2015). Longitudinal predictors of subjective recovery in psychosis. *The British Journal of Psychiatry*. doi:10.1192/bjp.bp.114.158428

Leamy, M., Bird, V., Le Boutillier, C., Williams, J., & Slade, M. (2011). Conceptual framework for personal recovery in mental health: systematic review and narrative synthesis. *The British Journal of Psychiatry, 199*(6), 445-452. doi:10.1192/bjp.bp.110.083733

Leventhal, H., Nerenz, D., & Steele, D. F. (1984). Illness representations and coping with health threats. In A. Baum & J. Singer (Eds.), *A Handbook of Psychology and Health* (pp. 219-252). Hillsdale, NJ: Erlbaum.

Lobban, F., Barrowclough, C., & Jones, S. (2003). A review of the role of illness models in severe mental illness. *Clinical Psychology Review, 23*(2), 171-196.

Lobban, F., Dodd, A. L., Dagnan, D., Diggle, P. J., Griffiths, M., Hollingsworth, B., . . . Jones, S. (2015). Feasibility and acceptability of web-based enhanced relapse prevention for bipolar disorder (ERPonline): Trial protocol. *Contemporary Clinical Trials, 41*, 100-109. doi:http://dx.doi.org/10.1016/j.cct.2015.01.004

Lobban, F., Solis-Trapala, I., Tyler, E., Chandler, C., & Morriss, R. K. (2012). The Role of Beliefs About Mood Swings in Determining Outcome in Bipolar Disorder. *Cognitive Therapy and Research, 37*(1), 51-60. doi:10.1007/s10608-012-9452-9

Lobban, F., Taylor, K., Murray, C., & Jones, S. (2012). Bipolar Disorder is a two-edged sword: A qualitative study to understand the positive edge. *Journal of Affective Disorders, 141*(2–3), 204-212. doi:http://dx.doi.org/10.1016/j.jad.2012.03.001

Mansell, W. (2006). The Hypomanic Attitudes and Positive Predictions Inventory (HAPPI): a pilot study to select cognitions that are elevated in individuals with bipolar disorder compared to non-clinical controls. *Behavioural and Cognitive Psychotherapy, 34*(04), 467-476.

Mansell, W., Harvey, A., Watkins, E., & Shafran, R. (2009). Conceptual Foundations of the Transdiagnostic Approach to CBT. *Journal of Cognitive Psychotherapy, 23*(1), 6-19. doi:10.1891/0889-8391.23.1.6

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*(05), 515-539. doi:doi:10.1017/S1352465807003827

Mansell, W., Paszek, G., Seal, K., Pedley, R., Jones, S., Thomas, N., . . . Dodd, A. (2011). Extreme Appraisals of Internal States in Bipolar I Disorder: A Multiple Control Group Study. *Cognitive Therapy and Research, 35*(1), 87-97. doi:10.1007/s10608-009-9287-1

McGuire, A. B., Marina Kukla, Amethyst Green, Daniel Gilbride, Kim T. Mueser, & Michelle P. Salyers. (2014). Illness Management and Recovery: A Review of the Literature. *Psychiatric Services, 65*(2), 171-179. doi:10.1176/appi.ps.201200274

Morrison, A. P., Law, H., Barrowclough, C., Bentall, R. P., Haddock, G., Jones, S. H., . . . Dunn, G. (2016). Programme Grants for Applied Research *Psychological approaches to understanding and promoting recovery in psychosis and bipolar disorder: a mixed-methods approach*. Southampton (UK): NIHR Journals Library.

Moss-Morris, R., Weinman, J., Petrie, K., Horne, R., Cameron, L., & Buick, D. (2002). The Revised Illness Perception Questionnaire (IPQ-R). *Psychology & Health, 17*(1), 1-16. doi:10.1080/08870440290001494

Mueser, K. T., Patrick W. Corrigan, David W. Hilton, Beth Tanzman, Annette Schaub, Susan Gingerich, . . . Marvin I. Herz. (2002). Illness Management and Recovery: A Review of the Research. *Psychiatric Services, 53*(10), 1272-1284. doi:10.1176/appi.ps.53.10.1272

Murray, G., Leitan, N. D., Thomas, N., Michalak, E. E., Johnson, S. L., Jones, S., . . . Berk, M. (2017). Towards recovery-oriented psychosocial interventions for bipolar disorder: Quality of life outcomes, stage-sensitive treatments, and mindfulness mechanisms. *Clinical Psychology Review, 52*, 148-163. doi:http://dx.doi.org/10.1016/j.cpr.2017.01.002

Nakagawa, S. (2004). A farewell to Bonferroni: the problems of low statistical power and publication bias. *Behavioral Ecology, 15*(6), 1044-1045. doi:10.1093/beheco/arh107

National Institute for Health and Care Guidance. (2014). *Bipolar disorder: assessment and management*. Retrieved from

Neil, S. T., Kilbride, M., Pitt, L., Nothard, S., Welford, M., Sellwood, W., & Morrison, A. P. (2009). The questionnaire about the process of recovery (QPR): a measurement tool developed in collaboration with service users. *Psychosis, 1*(2), 145-155.

Oud, M., Mayo-Wilson, E., Braidwood, R., Schulte, P., Jones, S. H., Morriss, R., . . . Kendall, T. (2016). Psychological interventions for adults with bipolar disorder: systematic review and meta-analysis. *The British Journal of Psychiatry, 208*(3), 213-222. doi:10.1192/bjp.bp.114.157123

Perneger, T. V. (1998). What's wrong with Bonferroni adjustments. *BMJ : British Medical Journal, 316*(7139), 1236-1238.

Radloff, L. S. (1977). The CES-D scale a self-report depression scale for research in the general population. *Applied psychological measurement, 1*(3), 385-401.

Russell, S. J., & Browne, J. L. (2005). Staying well with bipolar disorder. *Australian and New Zealand Journal of Psychiatry, 23*. doi:10.1080/j.1440-1614.2005.01542.x

Samalin, L., de Chazeron, I., Vieta, E., Bellivier, F., & Llorca, P.-M. (2016). Residual symptoms and specific functional impairments in euthymic patients with bipolar disorder. *Bipolar Disorders, 18*(2), 164-173. doi:10.1111/bdi.12376

Seal, K., Mansell, W., & Mannion, H. (2008). What lies between hypomania and bipolar disorder? A qualitative analysis of 12 non-treatment-seeking people with a history of hypomanic experiences and no history of major depression. *Psychology and Psychotherapy: Theory, Research and Practice, 81*(1), 33-53. doi:10.1348/147608307X209896

Todd, N. J., Jones, S. H., Hart, A., & Lobban, F. A. (2014). A web-based self-management intervention for Bipolar Disorder 'Living with Bipolar': A feasibility randomised controlled trial. *Journal of Affective Disorders, 169*, 21-29. doi:http://dx.doi.org/10.1016/j.jad.2014.07.027

Tse, S., Chan, S., Ng, K. L., & Yatham, L. N. (2014). Meta-analysis of predictors of favorable employment outcomes among individuals with bipolar disorder. *Bipolar Disorders, 16*(3), 217-229. doi:10.1111/bdi.12148

Tyler, E., Lobban, F., Sutton, C., Depp, C., Johnson, S., Laidlaw, K., & Jones, S. H. (2016). Feasibility randomised controlled trial of Recovery-focused Cognitive Behavioural Therapy for Older Adults with bipolar disorder (RfCBT-OA): study protocol. *BMJ Open, 6*(3). doi:10.1136/bmjopen-2015-010590

Zimmerman, M. (2012). Misuse of the Mood Disorders Questionnaire as a case-finding measure and a critique of the concept of using a screening scale for bipolar disorder in psychiatric practice. *Bipolar Disorders, 14*(2), 127-134. doi:10.1111/j.1399-5618.2012.00994.x

Zimmerman, M., & Galione, J. N. (2011). Screening for Bipolar Disorder with the Mood Disorders Questionnaire: A Review. *Harvard Review of Psychiatry, 19*(5), 219-228. doi:10.3109/10673229.2011.614101

Table 1: Psychometric properties of scales from development papers

Variable	***M (SD)***	**Reliability**		**Validity**		
		α	**Test-retest**	**Concurrent/predictive**	**Construct**	**Discriminant**
BRQ	2357.7 (414.0)	.88	√	√	√	
Jones et al (2013)						
ASRM	9.1 (3.6)	.79	√	√		√
Altman et al (1997)						(Manic vs. non-manic)
CES-D	24.42 (13.51)	.90	√	√	√	
Radloff (1977)						
HIQ-H	26.7 (6.92)	.87		√	√	√
Jones, Mansell & Waller (2006)						(controls vs. BD)
HIQ-N	31.03 (5.59)	.76		√	√	√
Jones, Mansell & Waller (2006)						(controls vs. BD)
IDQ-D	16.21 (6.21)	.90		√	√	
Jones & Day (2008)						
IDQ-N	27.96 (6.82)	.91		√	√	
Jones & Day (2008)						

BIPQ Lobban et al (2012)	Means for single items		√	√		√
HAPPI Dodd et al (2011)	41.96 (19.41)	.97			√	√

BRQ = Bipolar Recovery Questionnaire; ASRM = Altman Self-Rating Mania Scale; CES-D = Center for Epidemiologic Studies - Depression; HIQ-H = Hypomania Interpretations Questionnaire – Positive self-appraisals; HIQ-N = Hypomania Interpretations Questionnaire – Normalising appraisals ; IDQ-D = Interpretations of Depression Questionnaire – Negative self-appraisals; IDQ-N = Interpretations of Depression Questionnaire – Normalising appraisals; BIPQ = Brief Illness Perception Questionnaire ; HAPPI = Hypomanic Attitudes & Positive Predictions Inventory

*Only the mania scale was recommended for use by the original developers

Table 2: Descriptive statistics (N = 87)

Variable		*α*	*M*	*SD*	*Min*	*Max*
BRQ		.90	2220.1	497.4	898.0	3238.0
Mood symptoms	ASRM	.92	3.5	4.6	0	19
	CES-D	.94	24.9	14.3	1.0	55.0
	HIQ-Experience	.92	5.6	3.8	0	10.0
	IDQ-Experience	.91	6.8	3.5	0	10.0
HIQ	Positive self appraisals	.86	26.0	7.3	10.0	40.0
	Normalising appraisals	.85	24.1	7.1	10.0	40.0
IDQ	Negative self appraisals	.91	23.9	8.9	10.0	40.0
	Normalising appraisals	.89	26.3	7.6	10.0	40.0
BIPQ		.67	59.6	13.9	14.0	96.0
HAPPI		.96	39.6	16.4	5.0	81.4

BRQ = Bipolar Recovery Questionnaire; ASRM = Altman Self-Rating Mania Scale; CES-D = Center for Epidemiologic Studies - Depression; HIQ = Hypomania Interpretations Questionnaire; IDQ = Interpretations of Depression Questionnaire; BIPQ = Brief Illness Perception Questionnaire ; HAPPI = Hypomanic Attitudes & Positive Predictions Inventory

Table 3: Correlations between appraisals and beliefs about internal processes, mood, and recovery (*N* = 87)

Variable		**BRQ**	**ASRM**	**CES-D**
		r	***r***	***r***
Mood	ASRM	.12	--	--
	CES-D	-.62**	-.26*	--
	HIQ-Experience	.05	.48**	.07
	IDQ-Experience	-.32**	-.00	.67**
HIQ	Positive self appraisals (HIQ-H)	-.13	.14	.14
	Normalising appraisals (HIQ-N)	.25*	-.02	-.08
IDQ	Negative self appraisals (IDQ-D)	-.39**	-.07	.38**
	Normalising appraisals (IDQ-N)	.28*	.06	-.05
BIPQ		-.59**	.01	.62**
HAPPI		-.44**	.20	.42**

BRQ = Bipolar Recovery Questionnaire; ASRM = Altman Self-Rating Mania Scale; CES-D = Center for Epidemiologic Studies - Depression; HIQ = Hypomania Interpretations Questionnaire; IDQ = Interpretations of Depression Questionnaire; BIPQ = Brief Illness Perception Questionnaire ; HAPPI = Hypomanic Attitudes & Positive Predictions Inventory

*$p < 0.05$ ** Retains significance after *p* adjusted using Holm-Bonferroni correction

Table 4: Prediction of personal recovery (BRQ) in hierarchical multiple regression (*N* = 87)

Variable	*b*	*95% CI for b*		*SE*	*β*	*p*
		LL	*UL*			
Step 1 ***(****Constant)*	*2527.93*	*2341.84*	*2714.03*	*93.56*	--	*.000*
CES-D	-26.91	-34.06	-19.78	3.59	-.77	.000
IDQ-Exp	29.80	.34	59.27	14.81	.21	.05
Employment (yes/no)	335.93	185.31	486.56	75.73	.34	.000
Step 2 ***(****Constant)*	*2988.95*	*2455.64*	*3522.25*	*267.88*	--	*.000*
CES-D	-18.45	-25.66	-11.24	3.62	-.53	.000
IDQ-Exp	42.47	15.63	69.31	13.48	.30	.002
Employment (yes/no)	386.44	252.41	520.47	67.32	.39	.000
HIQ-N	6.07	-5.95	18.09	6.04	.09	.318
IDQ-D	-5.51	-15.35	4.34	4.95	-.10	.269
IDQ-N	2.68	-9.73	15.09	6.23	.04	.669
BIPQ	-13.49	-20.08	-6.89	3.31	-.38	.000
HAPPI	-1.60	-6.40	3.22	2.42	-.05	.512

Note: All significant regression coefficients retained significance when Holm-Bonferroni correction was applied

Table 5: Correlations investigating associations between recovery and specific beliefs about mood swings (N = 87)

Variable			
BIPQ	**Higher scores indicate stronger belief in…**	***r***	***p***
Consequences	More severe consequences of mood swings	-.39**	.000
Timeline	Mood swings will last a long time	-.17	.119
Personal Control	Less control over mood swings	.38**	.000
Treatment Control	Treatment less helpful for mood swings	.23*	.036
Identity	More symptoms experienced	-.31**	.004
Emotional Response – Concern	Greater concern about mood swings	-.53**	.000
Illness Comprehensibility	More understanding about mood swings	.20	.071
Emotional Response – Emotion	More emotionally affected by mood swings	-.35**	.001
Personal Effort	Greater personal effort being made to get well	.25*	.019
Cause Internal	Mood swings are caused by own behaviour	-.08	.448
Self-Blame	Mood swings are own fault	-.27*	.011

*$p < 0.05$ ** Retains significance after p adjusted using Holm-Bonferroni correction