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Depression, mania and self-reported creativity in bipolar disorder

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ABSTRACT

The present study investigated the relationship between self-reported creativity and current symptoms of depression and mania. Three hundred and ninety-seven participants previously diagnosed with BD completed an online questionnaire that included demographic and clinical information questions, creativity and self-report measures of depression and hypo/mania over the past week. Those reporting clinically significant depressive symptoms had significantly lower creativity scores than those in the hypo/mania and no current symptom groups. There were no significant differences between those reporting clinically significant hypo/mania and no current symptom groups, however they reported significantly higher creativity scores than those who reported symptoms of both hypo/mania and depression in the past week. Furthermore, subscales of the creativity measure demonstrated significant differences between some of the groups on the drama, interaction and maths/science subscales. These findings suggest that there is a relationship between mood and how people with BD understand and experience creativity. Further research is needed to better understand the role of creativity in the management of bipolar disorder and how this may be associated with well-being outcomes such as recovery, and also how it may be incorporated into treatment.

1. Introduction

Bipolar disorder (BD) is the fifth leading cause of disability worldwide affecting up to 2.4% of the population (Merikangas et al., 2011; WHO, 2008). Despite this, many who experience BD also report positive aspects of the illness, such as increased range and depth of emotional experience, amplified perceptual states, heightened connection with others and the natural world (Lobban et al., 2012), enhanced empathy, self-awareness, self-confidence, productivity and heightened creativity (Galvez et al., 2011; Parker et. al., 2012).

Creativity in particular, is subjectively valued by many people living with BD and may be an important resource for treatment and useful for reducing stigma for those living with the disorder (Johnson et al., 2016). Although there is substantial evidence that supports a relationship between BD and creativity, the exact nature of this relationship is yet to be established. Initial evidence supporting the connection between BD and creativity has been limited to biographical studies of eminently creative individuals, case studies, and studies of small samples of creative individuals, such as writers (Andreasen, 1997; Jamison, 1989), musicians (Ludwig, 1997), poets and artists (Jamison, 1989), with some suggesting that this relationship may be the result of a proneness to psychosis (Fink et al., 2014).

Manic states have been reported by people living with BD to be associated with heightened and intensified creativity (Johnson et al., 2016), and many people with BD believe that their creativity is fostered by periods of elevated mood (Murray and Johnson, 2010). In a sample of 219 participants diagnosed with bipolar disorder, 82% reported that they felt more creative when hypo/manic with those reporting greater creativity during hypo/mania also reporting a more creative personality type overall (McCraw et al., 2013).

However depression may also be important when understanding the relationship between creativity and mood in bipolar disorder. Rybakowski and Klonowska (2011) examined the effects of mood episodes on two objective measures of creativity in a sample of 48 participants. Participants were assessed during either a depressed or manic episode, and again during a period of remission, and compared with a healthy control group. It was found that creativity results were significantly lower during periods of depression than during periods of mania and remission. This may suggest that rather than the presence of hypo/mania enhancing creativity, that depression may play a larger role in dampening it.

Although objective measures are important in understanding the impact of mood on creativity, it may be useful to examine how individuals with BD perceive and report their own creative abilities

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during mood episodes. Even though many people with BD believe that their creativity is enhanced during periods of elevated mood, this may not always be reflected in creative output (Murray and Johnson, 2010).

Perceptions about the self (such as traits, preferences and abilities) are significant as they play an important role in a range of important life decisions, such as choosing hobbies, employment, friends and romantic partners (Silvia et al., 2012). In those living with BD, self-beliefs can also impact adherence and engagement with treatment (Berk et al., 2004). Thus, understanding how mood state may impact self-reported creativity is important, not only for the potential to reduce stigma, but also for the potential to be utilised as a resource to increase therapeutic engagement and enhance therapeutic outcomes in BD populations (Johnson et al., 2012).

The present study aimed to investigate if bipolar disorder symptoms were associated with differences in self-reported creativity in a sample of people living with bipolar disorder. It was hypothesised that self-reported creativity would significantly differ across mood groups (depressed, hypo/mania, symptoms of both depression and hypo/mania and no current symptoms). In line with previous research, it was expected that participants displaying recent symptoms of hypomania, as well as those displaying no symptoms would report higher creativity than those reporting clinically significant symptoms of depression.

2. Method

2.1. Participants

The sample was drawn from a larger ongoing study into living with Bipolar Disorder conducted at Western Sydney University. A total of 891 volunteered to participate in the study. Four hundred and thirty five individuals completed the survey and 456 partially completed the survey. Participants were included in the study if they indicated a confirmed diagnosis of BD (either BDI & BDII) and completed all key measures ($N = 397$). Participants who indicated an alternative diagnosis including Schizo-affective disorder, Borderline Personality Disorder and/or Cyclothymia were excluded from the final sample.

The final sample comprised of 52 (13.1%) male, 344 (86.4%) female participants and one participant who identified as agender (0.3%); aged between 16 and 67 years old ($M = 38.61$, SD = 11.22). Table 1 displays demographic and clinical characteristics.

Recruitment of participants occurred between 2017 and 2018 through paid advertising on mental health pages on Facebook. The Human Research Ethics Committee for Western Sydney University approved the study protocol (approval no. H12099).

Table 1
Demographic and clinical characteristics.

Variable	Category	*n*	%
Marital status	Married	118	29.6
	Never married	173	43.5
	Separated/Divorced/ Widowed	107	26.9
Region of birth	Australia	142	35.1
	Europe	107	26.5
	North America	78	19.3
	Africa	72	17.8
	Other	5	1.2
Aboriginal or Torres Strait Islander	Yes	24	5.9
Sexuality	Heterosexual	294	73.9
	Homosexual	18	4.5
	Bisexual	66	16.6
	Other	20	5
Education	Some schooling	40	10.1
	Completed secondary	77	19.3
	Vocational qualification	138	34.7
	Bachelor degree or higher	124	31.3
	Other	19	4.8
Employment	Full time	136	34.2
	Part-time/Casual/Unpaid	142	35.7
	Unemployed	120	30.2
BD type	Bipolar 1	148	37.2
	Bipolar 2	216	54.3
	Uncertain	43	8.5
Diagnosed with another mental health condition	Yes	316	79.4
Current medication	Antidepressant	218	54.8
	Antipsychotic	188	47.2
	Lithium	118	29.6
	Benzodiazepines	61	15.3
	Other	205	51.5

2.2. Measures

2.2.1. Demographic and clinical characteristics

Demographic characteristics included participant's age, gender (male, female, other), country of birth, country of residence, sexuality, marital status (married, widowed/divorced/separated, never married), education (some schooling, completed secondary, vocational qualification, bachelor degree or higher, other), and employment status (full-time, part-time/casual/unpaid, unemployed). Clinical characteristics included bipolar type (BDI, BDII), age at diagnosis, number of manic episodes, number of hospitalizations, comorbid mental illness (yes/no), and current medications.

2.2.2. Mania

The Altman Self-Rating Mania Scale (ASRM; Altman et al., 1997). The ASRM is a five item self-rating mania designed to assess the presence and severity of mania symptoms based on key DSM-IV criteria for mania. The ASRM requires participants to choose a statement in each item group that corresponded to how they felt over the previous seven days. Item groups correspond to core features of mania/hypomania, including positive mood (e.g. 'I feel happier or more cheerful than usual all of the time'), self-confidence (e.g. 'I feel extremely self-confident all of the time'), sleeping patterns (e.g. 'I can go all day and night without any sleep and not feel tired'), speech patterns (e.g. 'I often talk more than usual') and motor activity (e.g. 'I have frequently been more active than usual'). Each statement within an item group corresponds with a different score, ranging from 0 to 4. Scores of 6 or more indicates a high probability of mania or hypomania, whereas a score of 5 or below is less likely to be associated with symptoms of mania. The ASRM has good convergent validity and has been demonstrated to be an effective clinical tool for identification of hypomanic symptoms in BD populations, with sensitivity reported at 85.5% and specificity at 87.3% (Altman et al., 1997).

2.2.3. Depression

The Depression Anxiety Stress Scale (DASS-21; Lovibond and Lovibond, 1995). The DASS 21 is self-report measure designed to measure presence and severity across three subscales of depression, anxiety and stress. It is a short form version of the 42-item Depression Anxiety Stress Scale (DASS-42, Lovibond and Lovibond, 1995). Participants are asked to rate from 0 to 3 (0 = Never, 1 = Sometimes, 2 = Often, 3 = Almost Always) how much each item applied to them over the past week (e.g. 'I couldn't seem to experience any positive feeling at all'). On the depression subscale a score of 0–4 reported as within a normal range, a score of 5–6 as Mild, 7–10 as Moderate, 11–13 as Severe, and a score of 14 and above as Extremely Severe (Lovibond and Lovibond, 1995). The DASS-21 has been shown to have good internal consistency, as well as divergent and convergent validity in both clinical and non-clinical samples (Cronbach's alphas = 0.94 for Depression, 0.87 for Anxiety, and 0.91 for Stress) (Antony et al., 1998).

2.2.4. Creativity

The Creativity Domain Questionnaire-Revised (CDQ-R; Kaufman et. al., 2010). The Creativity Domain Questionnaire Revised is a 21-item scale

Table 2
Past seven days mood and creativity scores and ANCOVA results across four groups.

	F	Sig.	Depression Mean (SD)	Hypo/mania Mean (SD)	Both Mean (SD)	No symptoms Mean (SD)
Maths/Science	2.88	0.036	2.41 (0.95)	2.82 (1.1)	2.59 (1.05)	2.62 (0.97)
Drama	6.45	$p < 0.001$*	2.72 (1.11)	3.26 (1.11)	2.80 (1.1)	3.17 (1)
Interaction	16.56	$p < 0.001$*	2.76 (1.1)	3.63 (0.91)	3.06 (1)	3.44 (0.89)
Arts	0.43	0.74	3.29 (1.42)	3.51 (1.26)	3.33 (1.39)	3.32 (1.35)
General Creativity	9.65	$p < 0.001$*	2.72 (0.86)	3.28 (0.74)	2.89 (0.86)	3.1 (0.7)

* Significant difference after Bonferroni adjustment, revised $p = 0.0.01$.

that measures people's perceptions about their level of creativity across different domains. Participants are asked to rated their creativity in each area on a six-point scale, ranging from 0 = 'Not at all creative' to 6 = `Extremely creative'. Scores are summed and then averaged to correspond to the four factors comprising the measure, including drama (e.g. singing, acting, writing), math/science (e.g. logic, chemistry, computers), arts (e.g. design, painting, crafts) and interaction (e.g. selling, teaching, leadership). The four domains scores are averaged to obtain a global creativity score. Higher scores (on a scale from 1 to 6) indicate higher self-rated creativity. Cronbach's alphas have been reported as 0.78 for the drama subscale, 0.84 for the maths/science subscale, 0.78 for the arts subscale, 0.79 for the interaction and 0.89 for the full 21-item scale (Silvia et al., 2012).

2.3. Procedure

Participants accessed the questionnaire via an online survey, which was advertised on Facebook and through social media pages. No time limit was set for completing the survey and participants had the option to partially complete the survey, save their responses and return to the survey in their own time.

2.4. Analysis

Data was analysed using SPSS for Macintosh, Version 25.0. Data was checked for missing items and descriptive analyses included calculations of means for continuous variables and percentages for categorical variables. Analysis of associations and relationships between key variables was conducted prior to the primary analyses. Independent samples *t*-tests (for dichotomous variables e.g. comorbid mental illness) and one-way analyses of variance (ANOVA) for variables with more than two groups, including gender, marital status, country of birth, education, employment, bipolar subtype and medication were conducted to assess differences in general creativity.

Participants with scores above six on the ASRM were classified in to the hypo/manic mood group and those with scores above 11 on the DASS-21 were classified in the depressed mood group. Participants achieving high scores on both measures were classified into the hypo/depressed group, whilst those achieving sub-threshold scores on both measures were classified into the no symptoms group.

*Pearson correlations were used to assess the relationship between continuous variables, including age, age at diagnosis, number of episodes, number of hospitalisations, and general creativity. To explore the relationship between recent mood states (hypo/manic, depressed, mixed, depressed), a multivariate analyse of covariance (MANCOVA) controlling for age was conducted on the domains of creativity (Maths/Science, Drama, Interaction, Arts) and overall CDQ-R score. Alpha levels were set at 0.01 for all analysis and pairwise comparisons for the main analysis were conducted with the Bonferroni adjustment method to control for family-wise error. Power analysis for an MANCOVA with five dependent variables and one covariate was conducted in G*Power to determine sufficient sample size, using an alpha of 0.05, a power of 0.8, and a small effect size ($f^2 = 0.22$) (Faul et al., 2007).*

3. Results

Sixty-eight (17.1%) participants reported clinically significant hypo/manic symptoms on the ASRM and 167 (42.2%) reported clinically significant depressive symptoms in the moderate and above ranges on the DASS. Ninety-four participants (23.6%) reported no clinically significant symptoms on either the DASS or the ASRM and 68 (17.1%) reported clinically significant depression and hypo/mania symptoms in the past 7 days on both measures. The mean age of diagnosis was 28.95 (SD = 10.25). Mean number of prior episodes was 23.76 (SD = 32.43), and mean number of hospitalizations was 2.82 (SD = 4.27).

Age was found to significantly correlate with general creativity, $r = -0.122$, $p = 0.015$. No significant associations were found for comorbid mental illness, marital status, country of birth, education, employment, medication, age at diagnosis, number of episodes, or number of hospitalisations. An ANCOVA was conducted to examine if self-reported creativity differed within domains as a result of BD type (bipolar I or II), with age as a covariate. Results of this analysis indicated no significant difference between BD types in self-reported creativity on any of the subscales. There was also no significant interaction between gender and mood condition.

3.1. Main analysis

Results of the MANCOVA indicated creativity domain scores significantly differed according to mood after adjusting for age, F (12, 1029) = 4.81, $p = <0.0001$, Wilk's $\Lambda = 0.87$, partial $\eta^2 = 0.047$. Follow-up univariate analyses indicated significant differences between mood groups in the Drama subscale, and the Interaction subscale of the CDQ-R (see Table 2). Those in the depression group had significantly lower general creativity scores than those in the hypo/mania and no symptoms groups. The hypo/mania group also had significantly higher general creativity scores than the group experiencing symptoms of both hypo/mania and depression. No significant difference was found between the depression group and the group experiencing symptoms of both hypo/mania and depression.

In the Drama subscale, those in the hypo/mania and the no symptom groups had significantly higher scores than those in the depression group. In the Interaction subscale, those in the depression group had significantly lower scores than those in the hypo/mania and no symptom groups, and those in hypo/mania group had significantly higher scores than those who had been identified as experiencing both depression and hypo/mania in the last seven days. In the Maths/Science subscale, those in the hypo/mania group had significantly higher scores than those in the depression group. Pairwise comparisons are presented in Table 3.

4. Discussion

The aim of the present study was to examine differences in self-reported creativity (both general and domain-specific) based on mood symptoms in a sample of individuals living with BD. As anticipated, self-reported creativity significantly differed, particularly between depressed and hypo/manic mood states, both overall and within various

Table 3
Means and mean difference comparisons across four mood state groups.

		Mean	*SD*	Mean difference comparisons			
				1	2	3	4
				N = 167	*N* = 68	*N* = 68	*N* = 94
Maths/Science	1. Depression	2.41	0.95	–	−0.407*	−0.175	−0.207
	2. Hypo/mania	2.82	1.1	–	–	0.232	0.199
	3. Both	2.59	1.05	–	–	–	−0.033
	4. No symptoms	2.62	0.97	–	–	–	–
Drama	1. Depression	2.71	1.11	–	.551*	−0.084	0.457*
	2. Hypo/mania	3.26	1.11	.	–	0.467	0.094
	3. Both	2.80	1.1	–	–	–	−0.373
	4. No symptoms	3.17	1	–	–	–	–
Interaction	1. Depression	2.76	1.1	–	0.871*	−0.295	−0.68*
	2. Hypo/mania	3.63	0.91	–	–	0.576*	0.191
	3. Both	3.06	1.02	–	–	–	−0.384
	4. No symptoms	3.44	0.89	–	–	–	–
Arts	1. Depression	3.29	1.42	–	0.222	−0.048	0.031
	2. Hypo/mania	3.51	1.26	–	–	0.174	0.191
	3. Both	3.34	1.53	–	–	–	0.017
	4. No symptoms	3.32	1.35	–	–	–	–
General creativity	1. Depression	2.72	0.87	–	.554*	−0.165	−0.389*
	2. Hypo/mania	3.28	0.74	–	–	0.389*	0.166
	3. Both	2.89	0.86	–	–	–	−0.223
	4. No symptoms	3.10	0.7	–	–	–	–

* Significant difference after Bonferroni adjustment, revised $p = 0.0.01$.

domains of creativity. Those reporting symptoms of depression over the past week reported significantly lower scores on the creativity measure than all other participants. This is consistent with the findings of Rybakowski and Klonowska (2011) who noted lower objective creativity scores when participants were depressed compared to those with hypo/mania.

Those who reported hypo/mania symptoms over the past week did not report significantly higher scores in creativity on any domain compared to those who did not report any symptoms. This runs contrary to previous research that has noted a relationship between hypo/mania and creativity (Johnson et al., 2016; Murray and Johnson, 2010; McCraw et al., 2013). Differences in the results may be due to the study design and type. For instance, where Johnson et al. (2016) noted this relationship in a qualitative study and used a measure of creative achievement over the life course, this study focused on the beliefs about being creative over a range of specific creativity activities. It may be of interest to explore creativity using a variety of measures to assess the impact of mood on creativity behaviours from a range of perspectives given this difference discrepancy in results. It is likely that an inverted U-curve effect may be present (Abraham, 2014), where those in the mid-range of hypo/mania symptoms experience a greater sense of creativity than those at either end of the hypo/mania symptom spectrum. The current study could not explore this relationship due to the range of hypo/mania scores being limited. Further research should consider targeted recruitment of those experiencing a hypo/mania episode and those who are euthymic to determine the more precise nature of the relationship between symptom severity in bipolar disorder and creativity over a broader range of symptom presentations.

In relation to specific domains of creativity, those reporting hypo/manic symptoms reported higher creativity than those experiencing depressive symptoms in the Maths/Science domain, the Drama domain, and the Interaction domain, but not the Arts domain. Those experiencing recent depression symptoms reported significantly lower creativity in the Interaction domain than those experiencing recent symptoms of hypo/mania or no symptoms. This may be seen as consistent with behaviours during depression episodes, which may include social withdrawal and lower social confidence. Furthermore, those reporting recent hypo/manic symptoms reported higher creativity in the Interaction domain than those who reported symptoms of both hypo/mania and depression over the past week. These results suggest that it may be the presence of depression rather than hypo/mania that may have a greater impact on self-reported creativity overall. Future research could utilise a dimensional approach to the symptoms experienced by people living with bipolar disorder rather than a categorical approach to further explore those potential relationships..

4.1. Limitations

A cross-sectional design was employed which limits conclusions regarding causal inference, BD diagnoses were self-reported and not confirmed via objective clinical interview, and the sample consisted predominantly of females. Secondly, mood state was determined via self-report. No control group was also used in the present study, limiting comparisons, however this was not the aim of the present study. Finally, self-reports scales were chosen to better understand the subjective experience of creativity in BD populations. Noted limitations in this field of research include the use of a range of creativity measures, and definitions of creativity, which make the ability to draw comparisons between studies difficult (Fisher, 2015). Future research may endeavour to examine the relationship between creativity and mood (e.g. depression, hypo/mania, no symptoms etc.) using a within-subjects longitudinal design, and both objective and subjective measures of creativity to examine how individuals with BD perceptions of their creativity changes as mood state fluctuates. This would add insight into the longitudinal course of mood and its impact on creativity over time.

4.2. Conclusion

The present study found that self-reported creativity significantly differed between those reporting depression and hypo/manic mood over the past 7 days in the areas of general creativity, as well maths/science, drama and interaction domains of creativity. Depression appeared more important in the perception of creativity with lower scores being reported for those who were currently symptomatic. Further research is needed to better understand the relationship between mood and creativity, and how this may change as a result of mood shifts over time or how it may be utilised as a resource to enhance treatment and self-care.

Conflict of interest

None.

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Supplementary materials

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