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Intersections of phenomenology, voice beliefs and distress in bipolar disorder: a comparison with schizophrenia

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Abstract

Background: Auditory verbal hallucinations (AVH), or voice-hearing, can be a prominent symptom during fluctuating mood states in bipolar disorder (BD).

Aims: The current study aimed to: (i) compare AVH-related distress in BD relative to schizophrenia (SCZ), (ii) examine correlations between phenomenology and voice beliefs across each group, and (iii) explore how voice beliefs may uniquely contribute to distress in BD and SCZ.

Method: Participants were recruited from two international sites in Australia (BD = 31; SCZ = 50) and the UK (BD = 17). Basic demographic-clinical information was collected, and mood symptoms were assessed. To document AVH characteristics, a 4-factor model of the Psychotic Symptoms Rating Scale and the Beliefs about Voices Questionnaire-Revised were used. Statistical analyses consisted of group-wise comparisons, Pearson's correlations and multiple hierarchical regressions.

Results: It was found that AVH-related distress was not significantly higher in BD than SCZ, but those with BD made significantly more internal attributions for their voices. In the BD group, AVH-related distress was significantly positively correlated with malevolence, omnipotence and resistance, However, only resistance, alongside mania and depressive symptoms, significantly contributed to AVH-related distress in BD.

Discussion: Our findings have several clinical implications, including identification of voice resistance as a potential therapeutic target to prioritise in BD. Factoring in the influence of mood symptoms on AVH-related distress as well as adopting more acceptance-oriented therapies may also be of benefit.

Keywords: Auditory verbal hallucinations; Bipolar disorder; Hallucinations; Voice-hearing; Voices

Introduction

Auditory verbal hallucinations (AVH), also known as voice-hearing experiences, in bipolar disorder (BD) serve as a prominent symptom that warrants ongoing clinical and research interest. Wide variability in prevalence estimates exists (11–67%; Laroi *et al.*, 2012; Pini *et al.*, 2004), probably due to methodological complications involving discrepant methods for measuring AVH, differing diagnostic BD subtypes, and lack of consideration of illness course or specific mood states. The latter may be especially important, given BD is characterised by alternating states

of elated (i.e. mania or hypomania) and/or depressed mood, alongside possible co-occurrence of psychotic symptoms, such as AVH (Goodwin and Jamison, 2007). This is accounted for by the designation 'with or without psychotic features' in prevailing nosological systems (American Psychiatric Association, 2013; World Health Organisation, 2018). Emerging consensus has also pointed to AVH being most marked during mania or mixed mood episodes (Azorin *et al*., 2013; Baethge *et al*., 2005). However, there is scant empirical research regarding the impact of AVH in BD as well as potential contributing factors, such as underlying voice beliefs, to the phenomenological experience and levels of distress. Given the high prevalence of AVH in BD (relative to other types of hallucinations or delusions), coupled with manifestation during acute mood states, gaining a clearer understanding of its phenomenology, including related drivers and distress, is imperative. The current study thus aimed to compare AVH-related distress in BD relative to schizophrenia (SCZ), and to examine whether dimensions of voice beliefs contributed to this distress.

Voice-related distress in BD

Research into AVH is most advanced in the schizophrenia spectrum disorders (SSD), where it has been associated with significant emotional distress, functional impact and suicide risk (Thomas *et al*., 2014). Existing research has shown that of those with SSD, 73% were moderately distressed and 52% were severely distressed by their AVH experiences (Steel *et al*., 2007). Reducing distress from voices therefore remains a principal target for many psychological interventions, alongside improving socio-occupational functioning, and lessening the likelihood of complying with harmful instructions (Birchwood *et al*., 2014; Thomas *et al*., 2014). There is a converse possibility that AVH in BD may be experienced 'positively' in mania, and studying AVH in BD could contribute to new ways of thinking about protective factors or coping strategies for distressed voice-hearers (Copolov *et al*., 2004a).

In the limited studies that have examined the emotional impact of AVH in BD, a shared finding has been that the intensity of AVH-related distress may be higher relative to SCZ (Kumari *et al*., 2013; Okulate and Jones, 2003). No group differences in perceptual facets, such as frequency and volume, were found, but emotional characteristics, such as intensity of distress (Kumari *et al*., 2013) as well as fear reactions and voice compliance (Okulate and Jones, 2003) appeared significantly heightened in BD compared with SCZ. Possible reasons underlying this are not clear, but the use of small, unequal or mixed psychosis samples as well as limitations in AVH assessments (e.g. unvalidated tools) were significant shortcomings that limit the generalisability of these findings. A recent study conversely reported no significant group differences in AVH-related distress across four SSD and mood-disordered groups, but these were in relation to worst-ever AVH episode, and the potential influence of current mood symptoms were unaccounted for (Toh *et al*., 2020).

Beliefs about voices in BD

Cognitive models of AVH propose that individual beliefs or appraisals about voices dictate subsequent emotional and behavioural responses (Chadwick and Birchwood, 1994). Within this context, appraisals refer to subjective interpretations or judgements made about voices in an attempt to derive meaning from these experiences (Mawson *et al*., 2010). In other words, the prevailing hypothesis from these cognitive theories is that distress is more closely linked to personal beliefs about AVH than voice content *per se*, or physical characteristics of the experience (Peters *et al*., 2012). Yet this does not necessarily mean that distress is solely a function of voice beliefs. For example, the content of abusive or critical voices is likely to be unpleasant or distressing, regardless of how one appraises the event (McCarthy-Jones, 2015).

Within the SSD literature, a body of evidence exists to support the importance of two sets of beliefs in influencing AVH-related distress – intent and power (Mawson *et al*., 2010; Tsang

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et al., 2021). Studies have shown that voices perceived as malevolent, or intending to do harm, were positively associated with distress, even after controlling for extraneous clinical factors, including voice frequency or illness duration (Birchwood and Chadwick, 1997; Mawson *et al.*, 2010; van der Gaag *et al.*, 2003). In contrast, there is preliminary evidence that voices perceived as benevolent, or having good intentions, were negatively associated with distress (Sanjuan *et al.*, 2004). These appraisals have also been shown to be important in shaping behavioural responses, with malevolent voices more likely to be resisted, and benevolent voices more likely to be complied or engaged with (Birchwood and Chadwick, 1997; Sayer *et al.*, 2000; van der Gaag *et al.*, 2003). Likewise, omnipotence, or the perceived power of voices, predicted AVH-related distress and compliance (Birchwood *et al.*, 2000; Mawson *et al.*, 2010). However, it is noted that these constructs (and related therapies) may operate differently for those with BD, who typically experience fluctuations in self-esteem, in line with acute mood symptoms (Nilsson *et al.*, 2010; Paulik, 2012).

Whilst there are no published studies examining beliefs about voices in BD (but see Joppich, 2014), methods employed in SCZ have been somewhat successfully applied to clinical cohorts with other diagnoses. For instance, Hepworth *et al.* (2013) found that cognitive responses to voices in borderline personality disorder (BPD) mirrored those in SCZ, arguing that established psychological interventions centred on voice appraisals may be helpful for those who experience distressing voices. Whether this may also hold true in BD remains unknown, but is worthy of future investigations to inform which specific types or elements of existing psychological interventions for voices may be most helpful for affected individuals experiencing distressing voices.

Aims and hypotheses of the current study

The current study had three primary aims and employed a BD group, with a SCZ group serving as clinical controls. Those with a schizoaffective disorder diagnosis were specifically excluded, given the presence of prominent affective symptoms would weaken the distinction between our two groups. First, we compared the phenomenology of AVH in BD relative to SCZ, based on a 4-factor model of the well-established Psychotic Symptoms Rating Scale (PSYRATS; Woodward *et al.*, 2014). It was hypothesised that AVH-related distress would be significantly higher in BD relative to SCZ (Hypothesis 1), but whether group differences in other factors, including dimensions of voice beliefs, would be detected remained exploratory. Second, we examined interrelations amongst AVH-related distress and dimensions of voice beliefs in BD and SCZ separately. Akin to SCZ, it was hypothesised that AVH-related distress in BD would be significantly positively correlated with malevolent (Hypothesis 2a) or omnipotent (Hypothesis 2b) voices, but significantly negatively correlated with benevolent voices (Hypothesis 2c). We also examined whether malevolent voices were significantly more likely to be resisted, whereas benevolent or omnipotent voices were more likely to be engaged with in BD. Third, we explored which dimensions of voice beliefs contributed to AVH-related distress across the BD and SCZ groups separately, when mania and depressive symptoms were controlled for.

Method

Participants and procedure

The current study involved amalgamation and analysis of datasets across two sites in Australia (BD = 31; SCZ = 50) and the UK (BD = 17). To be eligible, participants: (i) were aged 18 years or above, (ii) had a primary BD or SCZ diagnosis (see 'Materials' section below), (iii) experienced AVH over at least three distinct lifetime episodes (to omit one-off or transient hallucinatory events brought on by typical human misperception), (iv) had adequate English language ability to impart meaningful information, and (v) no known intellectual disability or significant history of neurological disorders. To ensure ecological validity, alcohol or substance use disorders were

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permitted so long as remitted within the past 12 months. Participants were recruited from in-patient and out-patient mental health services (e.g. Alfred Hospital and affiliate clinics in Melbourne, and South London and Maudsley National Health Service), as well as community and peer support advertising (e.g. Voices Research Participant Registry at Swinburne University of Technology and Bipolar UK). Participants attended a single in-person session, where they completed clinical interviews and paper-and-pencil questionnaires, lasting less than three hours (a remote option via telephone interview was possible, if preferred).

Materials

A standard demographic-clinical record was used to collect relevant personal and health information. To corroborate primary diagnosis of BD or SCZ, the MINI International Neuropsychiatric Interview (Sheehan *et al.*, 1998) was employed. Mania and depressive symptoms were respectively assessed using the Young Mania Rating Scale (YMRS; Young *et al.*, 1978) and Beck Depression Inventory (BDI-II; Beck *et al.*, 1961) at the Australian site or the Altman Self-Rating Mania Scale (ASRMS; Altman *et al.*, 1997) and Quick Inventory of Depressive Symptomatology Self-Rated (QIDS-SR; Rush *et al.*, 2003) at the UK site. For these scales, higher scores generally denote increased symptom severity, and categorical thresholds[1] were used to provide descriptive comparisons across corresponding mood constructs. Good convergent validity has, moreover, been demonstrated between the YMRS and ASRMS (Sajatovic *et al.*, 2015) as well as BDI-II and QIDS-SR (Reilly *et al.*, 2015).

To assess AVH characteristics, including distress, as well as dimensions of underlying voice beliefs, the PSYRATS (Haddock *et al.*, 1999) and Beliefs about Voices Questionnaire-Revised (BAVQ-R; Chadwick *et al.*, 2000) were respectively used. The AVH subscale of the PSYRATS evaluates voice characteristics across 11 domains (i.e. *frequency*, *duration*, *location*, *loudness*, *beliefs about origin*, *amount and degree of negative content*, *amount and intensity of distress*, *disruption to life*, and *controllability*), rated on 5-point Likert scales (0–4). Scores are summed, with higher scores denoting increased severity (0–44). Aggregate scores can also be calculated based on a multisite validated 4-factor model: *frequency* (*frequency*, *duration*, *disruption to life*), *distress* (*amount and degree of negative content*, *amount and intensity of distress*, *controllability*), *attributions* (*location*, *beliefs about origin*) and *loudness* (Woodward *et al.*, 2014). The BAVQ-R is a 35-item self-report measure evaluating individual beliefs about the intent and power as well as emotional and behavioural responses to voices, rated on 4-point Likert scales (0–3). Scores are summed across five subscales – *malevolence* (i.e. persecutory or evil intent; 0–18), *benevolence* (i.e. helpfulness or kindness; 0–18), *omnipotence* (i.e. perceived power or authority; 0–18), *engagement* (i.e. attempts to connect or involve; 0–24) and *resistance* (i.e. attempts to avoid, ignore or suppress; 0–27). Higher scores denote increased operation of each dimension, and subscale scores may be summed to yield a total score. A revised factor structure for the BAVQ-R with improved psychometrics has also been proposed (Strauss *et al.*, 2018).

Statistical analysis

Statistical analysis was performed using IBM SPSS Statistics, version 28. Data were presented as means and standard deviations or percentages. Preliminary analysis of demographic-clinical information provided characterisation of our two subgroups. One-way analyses of variance (ANOVAs) were employed for continuous variables, with Welch's *F* reported when Levene's test

[1]For YMRS: ≤12 indicates *remission*; 13–19 *minimal symptoms*; 20–25 *mild mania*; 26–37 *moderate mania*; and ≥38 *severe mania*; for BDI-II: ≤9 indicates *no depression*; 10–18 *mild depression*; 19–29 *moderate depression*; and ≥30 *severe depression*; for ASRMS: ≥6 indicates *probable mania* or *hypomania*; for QIDS-SR: ≤5 indicates *no depression*; 6–10 *mild depression*; 11–15 *moderate depression*; 16–20 *severe depression*; and ≥21 *very severe depression*.

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for homogeneity of variances was significant (Field, 2009). Chi-squared tests of independence were used for categorical variables (Yates' continuity correction for 2×2 tables), with adjusted residuals >2.5 interpreted when significant effects were detected. To test Hypothesis 1 comparing AVH-related distress in BD versus SCZ, an ANOVA was conducted. To test Hypothesis 2 examining interrelations amongst AVH-related distress and dimensions of voice beliefs, two sets of Pearson's correlation analysis were performed for the BD and SCZ groups. To protect against family-wise error, the Benjamini–Hochberg procedure (1995) was employed to control for false discoveries, based on the method described in McDonald (2007). Owing to the large number of correlation analyses, a conservative false discovery rate of .028 was applied, such that no more than one false positive (based on 36 correlations) was acceptable.

To explore the predictive utility of voice beliefs for AVH-related distress, two parallel sets of hierarchical multiple regression analyses were employed for the BD and SCZ groups. The dependent variable was the distress factor of the PSYRATS, with depressive (BDI-II/QIDS-SR) and mania (YMRS/ASRMS) symptoms entered in Step 1, dimensions of voice beliefs (i.e. BAVQ-R malevolence, benevolence and omnipotence) entered in Step 2, and responses to voices (i.e. BAVQ-R engagement and resistance) entered in Step 3. For BAVQ-R engagement and resistance, only the behavioural components (i.e. Items 27–35) were included in the regressions (to avoid conflation of emotional responses to voices with the outcome variable). To account for differing mood measures, categorical thresholds were used to maximise equivalence across mania and depression scales.[2] To ensure the number of predictors was within recommended guidelines for minimum sample size requirements (Tabachnick and Fidell, 2007), only those that were significantly correlated with the dependent variable were entered into each regression (see Table A in Supplementary material). Demographic variables, involving age, sex and education were thus omitted, as they failed to exhibit significant associations with AVH-related distress. Assumptions of normality and homoscedasticity were supported. No significant multi-collinearity issues between theoretically related predictors were identified ($r = .011$–$.690$), and tolerance and variance inflation factors were within prescribed limits. *Post-hoc* power calculations demonstrated that our study was sufficiently powered to detect potential group differences across all outcome variables, with the possible exception of omnipotence (see Table E in Supplementary material).

Results

Group-wise comparisons of demographic-clinical information and AVH variables are presented in Table 1. The subgroups were well-matched across most demographic-clinical variables, except for age and birthplace; the BD group was significantly younger, with a larger proportion endorsing a European country of birth, relative to the SCZ group. For AVH variables, a single difference was noted on the attributions factor of the PSYRATS; BD participants ascribed significantly greater internal localisation and/or origins for their voices, compared with SCZ participants. No other significant group differences were found for the other PSYRATS factors (including distress) or dimensions of voice beliefs.

Correlations amongst dimensions of voice beliefs (BAVQ-R) and AVH phenomenology (PSYRATS) are shown in Table 2. For the BD group, frequency was significantly positively correlated with resistance, and distress was significantly positively correlated with malevolence, omnipotence and resistance. In addition, malevolence and omnipotence were significantly positively correlated with resistance (and each other), whereas benevolence was significantly positively correlated with engagement. For the SZ group, frequency, distress and attributions were significantly positively correlated with malevolence and omnipotence, with attributions also significantly positively correlated with resistance. Furthermore, loudness was significantly

[2]For YMRS: ≥20 indicates *probable mania* or *hypomania* (to align with dichotomous classification in ASRMS); for QIDS-SR: ≥16 denotes *severe depression* (*severe* and *very severe* categories collapsed to ensure concordance with BDI-II).

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Table 1 Group-wise comparisons of demographic-clinical information and AVH variables

	Means ± standard deviations or percentages		Statistics		
	BD (n = 48)	*SCZ (n = 50)*	*Test statistic*	*Significance (p)*	*Effect size*
Demographic					
Age (years)	35.0±12.7	40.3±11.1	$F = 4.8$	**.030**	$\eta^2 = .048$
Sex (% male)	54.2	44.0	$\chi^2 = 0.6$	.421	$\phi = .102$
Education (years)	14.8±3.6	13.8±3.4	$F = 1.9$	.176	$\eta^2 = .020$
Employment (% not working, student, working)	47.9, 18.8, 33.3	65.2, 13.0, 21.7	$\chi^2 = 2.9$	.238	$V = .175$
Marital status (% partnered)	25.0	12.8	$\chi^2 = 1.6$	.208	$\phi = .156$
Birthplace (% Oceania, Europe, others)	56.3, 35.4, 8.3	66.0, 8.0, 26.0	$\chi^2 = 13.4$	**.001**	$V = .369$
Ethnicity (% white Caucasian)	81.3	76.0	$\chi^2 = 0.2$	.699	$\phi = .064$
Clinical					
Illness duration (years)	10.8±8.2	13.4±9.5	$F = 2.0$	.164	$\eta^2 = .022$
Number of hospitalisations	2.9±2.6	5.2±9.5	$F = 2.4$	.125	$\eta^2 = .028$
Last voice(s) episode (weeks)	104.9±283.9	41.4±222.4	$F = 1.5$	.220	$\eta^2 = .016$
[†]Psychiatric medication (% yes)	81.3	78.0	$\chi^2 = 0.02$	.882	$\phi = .040$
[‡]Depression (% none, mild, moderate, severe)	25.0, 22.9, 20.8, 31.3	22.4, 38.8, 24.5, 14.3	$\chi^2 = 5.3$	.154	$V = .233$
[§]Mania (% probable mania or hypomania)	20.8	6.1	$\chi^2 = 3.3$	.068	$\phi = .216$
Hallucinations (AVH)					
Beliefs about voices (BAVQ-R)	45.4±15.9	41.2±17.6	$F = 1.5$	.223	$\eta^2 = .016$
Malevolence	6.9±5.3	6.6±5.4	$F = 0.04$	.843	$\eta^2 < .001$
Benevolence	6.7±5.1	5.3±5.3	$F = 1.7$	.200	$\eta^2 = .017$
Omnipotence	8.9±4.0	7.8±4.4	$F = 1.6$	.211	$\eta^2 = .016$
Engagement	8.1±6.6	6.8±6.7	$F = 0.9$	.341	$\eta^2 = .010$
Resistance	14.8±7.7	14.5±7.9	$F = 0.05$	.819	$\eta^2 = .001$
AVH phenomenology (PSYRATS)	19.1±11.3	22.4±12.9	$F = 1.7$	.189	$\eta^2 = .018$
Frequency	4.1±3.9	5.0±4.0	$F = 1.6$	.208	$\eta^2 = .016$
Distress	11.0±7.8	11.6±7.5	$F = 0.1$	.710	$\eta^2 = .001$
Attributions	2.9±1.8	4.2±2.6	$F = 8.3$	**.005**	$\eta^2 = .079$
Loudness	1.5±1.0	1.3±1.1	$F = 0.3$	.557	$\eta^2 = .004$

Note. AVH = Auditory verbal hallucinations; BD = bipolar disorder; SCZ = schizophrenia; BDI-II = Beck Depression Inventory; QIDS-SR = Quick Inventory of Depressive Symptomatology Self-Rated; YMRS = Young Mania Rating Scale; ASRMS = Altman Self-Rating Mania Scale; BAVQ-R Beliefs about Voices Questionnaire-Revised; PSYRATS = Psychotic Symptoms Rating Scale.
[†]Psychiatric medication denotes any combination of antipsychotics, mood stabilisers, or antidepressants. [‡]Depression assessed using categorical thresholds for BDI-II and QIDS-SR for Australian and UK sites respectively. [§]Mania assessed using categorical thresholds for YMRS and ASRMS for Australian and UK sites respectively.

Table 2. Correlations amongst dimensions of voice beliefs and AVH phenomenology

	Statistics *r*, *p**							
BD (*n* = 48)	BAVQ-R malevolence	BAVQ-R benevolence	BAVQ-R omnipotence	BAVQ-R engagement	BAVQ-R resistance	PSYRATS frequency	PSYRATS distress	PSYRATS attributions
BAVQ-R malevolence	1							
BAVQ-R benevolence	−.350, .015	1						
BAVQ-R omnipotence	**.606, <.001**	−.048, .748	1					
BAVQ-R engagement	−.290, .046	**.804, <.001**	.236, .107	1				
BAVQ-R resistance	**.506, <.001**	−.190, .195	**.410, .004**	−.223, .128	1			
PSYRATS frequency	.287, .048	.128, .387	.366, .011	.125, .399	**.382, .007**	1		
PSYRATS distress	**.427, .003**	−.068, .652	**.446, .002**	−.007, .965	**.553, <.001**	**.712, <.001**	1	
PSYRATS attributions	.061, .682	.149, .313	-.044, .768	−.058, .696	.067, .651	**.474, <.001**	.207, .163	1
PSYRATS loudness	.067, .654	.080, .591	.012, .937	−.089, .552	.188, .207	**.415, .004**	.337, .020	**.532, <.001**
SCZ (*n* = 50)								
BAVQ-R malevolence	1							
BAVQ-R benevolence	−.233, .108	1						
BAVQ-R omnipotence	**.669, <.001**	.113, .440	1					
BAVQ-R engagement	−.177, .223	**.882, <.001**	.200, .168	1				
BAVQ-R resistance	**.690, <.001**	−.273, .058	**.550, <.001**	−.332, .020	1			
PSYRATS frequency	**.484, <.001**	.147, .312	**.399, .005**	.133, .363	.258, .074	1		
PSYRATS distress	**.574, <.001**	.067, .656	**.426, .003**	.053, .725	.329, .024	**.662, <.001**	1	
PSYRATS attributions	**.427, .002**	−.044, .765	**.354, .012**	−.072, .623	**.355, .012**	**.732, <.001**	**.524, <.001**	1
PSYRATS loudness	**.398, .004**	−.031, .835	.315, .028	−.058, .692	**.389, .006**	**.574, <.001**	**.376, .008**	**.695, <.001**

AVH, auditory verbal hallucinations; BD, bipolar disorder; SCZ, schizophrenia; BAVQ-R, Beliefs about Voices Questionnaire-Revised; PSYRATS, Psychotic Symptoms Rating Scale.
*For the BD group, significant when $p \leq .007$, and for the SCZ group, significant when $p \leq .012$, using a false discovery rate of .028 based on the Benjamini–Hochberg procedure (1995).

Table 3. Hierarchical regression examining the contribution of voice beliefs in predicting AVH-related distress, controlling for mood symptoms (where appropriate)

	Statistics				
BD ($n = 48$)	R^2 change, p	β	t	p	Part correlation
Step 1	**.357, <.001**				
Depression (BDI-II or QIDS-SR)		.399	3.3	**.002**	.399
Mania (YMRS or ASRMS)		.442	3.7	**<.001**	.442
Step 2	**.062, .119**				
Depression (BDI-II or QIDS-SR)		.319	2.6	**.014**	.302
Mania (YMRS or ASRMS)		.361	2.8	**.007**	.331
Malevolence (BAVQ-R)		.206	1.4	.174	.163
Omnipotence (BAVQ-R)		.095	0.6	.552	.070
Step 3	**.053, .048**				
Depression (BDI-II or QIDS-SR)		.279	2.3	**.027**	.261
Mania (YMRS or ASRMS)		.346	2.8	**.008**	.317
Malevolence (BAVQ-R)		.089	0.6	.570	.065
Omnipotence (BAVQ-R)		.127	0.8	.415	.093
Resistance (BAVQ-R)		.260	2.0	**.048**	.231
SCZ ($n = 50$)					
Step 1	**.333, <.001**				
Malevolence (BAVQ-R)		.524	3.2	**.003**	.389
Omnipotence (BAVQ-R)		.075	0.5	.652	.056

AVH, auditory verbal hallucinations; BD, bipolar disorder; SCZ, schizophrenia; BDI-II, Beck Depression Inventory; QIDS-SR, Quick Inventory of Depressive Symptomatology Self-Rated; YMRS, Young Mania Rating Scale; ASRMS, Altman Self-Rating Mania Scale; BAVQ-R, Beliefs about Voices Questionnaire-Revised.

positively correlated with malevolence and resistance. In terms of interscale correlations, the same pattern of associations was found amongst the dimensions of voice beliefs in the SCZ group as in BD. Across both groups, the four factors of the PSYRATS were all significantly positively correlated with one another (except for distress in the BD group only, which exhibited no significant associations with attribution and loudness).

Results of our two sets of regressions for AVH-related distress are shown in Table 3, where only predictors exhibiting significant associations with the dependent variable were entered into the model. For the BD group, mania and depressive symptoms were significant predictors in Step 1, and remained significant in Steps 2 and 3, with resistance added as a significant predictor in Step 3 (malevolence and omnipotence were not significant throughout). The final model was significant, $F_{5,46} = 7.3$, $p < .001$, adjusted $R^2 = .408$, with mania, depression and resistance respectively explaining 10.0%, 6.8% and 5.3% of the variance in AVH-related distress. For the SCZ group, only malevolence was a significant predictor. The model was significant, $F_{2,46} = 11.0$, $p < .001$, adjusted $R^2 = .302$, with malevolence uniquely explaining 15.1% of the variance in AVH-related distress. When all preceding analyses were re-run based on the revised BAVQ-R factor structure (Strauss *et al.*, 2018), negligible deviations from the original findings were noted (see Tables B to D in Supplementary material).

Discussion

The current study aimed to: (i) compare AVH-related distress in BD relative to SCZ, (ii) examine interrelations between AVH phenomenology and dimensions of voice beliefs by group, and (iii) explore which dimensions of voice beliefs contributed significantly to AVH-related distress across BD and SCZ separately. The subgroups were generally well-matched across major demographic-clinical variables, except for BD participants being significantly younger, with a

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greater proportion being born in a European nation (owing to the UK samples) relative to SCZ participants.

The first hypothesis that AVH-related distress would be significantly higher in BD than SCZ was not supported. No group differences were identified across three factors of the PSYRATS (or BAVQ-R dimensions), with attributions being the only exception, where the BD group endorsed significantly more internal voices and/or self-related explanations regarding possible origins for their voices. Conversely, we can surmise that the SCZ group ascribed to significantly more voices outside the head and/or external causes for their voices. Localisation differences may be of less significance, given wide variability in physical manifestations of AVH across and within disorders (Copolov *et al.*, 2004b; Toh *et al.*, 2020). We may, however, speculate that generation of predominantly self-related explanations for voices in BD (cf. external causes in SCZ) may reflect euthymic mood at the time – its impact on the content, tone and physiological experience of AVH, or better insight into the psychological nature of symptoms. This is buttressed by tentative evidence that internal voices may be associated with improved insight (Copolov *et al.*, 2004b). Furthermore, insight fluctuations in BD in line with illness course are known (Latalova, 2012), and may be especially preserved during depressive phases (52.1% of our BD sample endorsed moderate to severe depression in Table 1; Cassidy, 2010). More broadly, prominent commonalities in AVH phenomenology and beliefs across BD and SCZ complicate the ongoing question of how best to conceptualise BD and SCZ, given identification of aetiological, neurobiological and endophenotypic overlaps (Craddock and Owen, 2010; Pearlson, 2015), despite these disorders being considered as dichotomous disease entities in psychiatric nosology.

The second hypothesis was partially supported in that AVH-related distress was significantly positively correlated with malevolence (Hypothesis 2a) and omnipotence (Hypothesis 2b) in our BD group. As expected, this pattern of findings was replicated across the SCZ group, in line with existing literature (Birchwood *et al.*, 2000; Mawson *et al.*, 2010; Tsang *et al.*, 2021). Notably, AVH-related distress was also significantly positively correlated with resistance in the BD group. This represents a novel finding that contributes to emerging literature about the role of resistance and compliance in AVH and related distress (Fielding-Smith *et al.*, 2022). Conversely, no significant association was found with benevolence (Hypothesis 2c; or engagement) for either group. Instead, we observed an added significant positive correlation between frequency and resistance in the BD group only, while numerous significant positive associations were shown between PSYRATS factors malevolence, omnipotence and resistance in the SCZ group. Broadly, this seems to signify that AVH-related distress (and frequency to a lesser degree) in BD may be underpinned by notions of malevolence, omnipotence and resistance. Across both groups, we corroborated that voices appraised as malevolent or benevolent were more likely to be resisted or engaged with, respectively (see Table 2). Voices appraised as omnipotent were also more likely to be perceived as malevolent and resisted. These findings are in line with previous studies in SSD (Birchwood and Chadwick, 1997; Sayer *et al.*, 2000; van der Gaag *et al.*, 2003), and verify that voice appraisals shape subsequent behavioural responses in BD in similar ways as in SCZ, despite fluctuations in acute mood symptoms in the former disorder. This substantiates the use of existing therapeutic applications for managing voices in SCZ as applied to BD, with some adaptations (see 'Clinical implications' section below).

The third aim of exploring whether dimensions of voice beliefs significantly contributed to the prediction of AVH-related distress, when mood symptoms were accounted for, yielded notable findings. For the BD group, mania, depression and resistance were significant predictors, cumulatively explaining 22.1% of the variance in AVH-related distress in the final model. Evidently, voice resistance contributed significantly to AVH-related distress in BD, although representing a small effect size, when mood symptoms were controlled for. This contrasted against findings in the SCZ group, where malevolence was the only significant predictor, with a medium effect size. The fact that AVH-related distress in BD appeared to be driven by a combination of mood symptoms and (behavioural) voice resistance, as opposed to solely malevolence in SCZ, is of

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note. This finding, albeit tentative, deserves further investigation, and if corroborated, will likely confer significant clinical implications.

To place our findings into context with existing AVH literature across various psychiatric disorders, we can tentatively conclude that voice phenomenology and dimensions of voice beliefs tend to exhibit more similarities than differences in SCZ, BD and BPD (Hepworth *et al*., 2013; Tsang *et al*., 2021). A possible exception relates to resistance, which was seemingly elevated in the BD group, and associated with increased distress, likely representing a complex process for individuals navigating the impact of mood episodes and the experience of AVH therein. Understanding potential behavioural and cognitive differences in the process and function of resistance to (benevolent and malevolent) voices for those with BD may therefore serve as a fruitful therapeutic target, or at a minimum, should be taken into consideration during adaptions to prevailing AVH interventions (see 'Clinical implications' section below).

Clinical implications

At present, there is no consensus for clinical practice in the management of AVH in BD, with insufficient clinical and research attention devoted to this issue. Taken together, our findings offer some clinical considerations worth contemplation. Although it does not appear that significantly more distressing voices are experienced in BD, comparable levels of AVH-related distress with SCZ signify that therapeutic interventions in BD are much needed. Given noted similarities in AVH between these disorders, existing cognitive-behavioural therapies (and anti-psychotic medications) effective in SCZ are likely to be applicable to BD. Yet as disparate patterns of associations and potential drivers underlying voice-related distress exist in BD (i.e. mood symptoms, frequency, resistance), some tailoring of treatment approaches may be warranted. The lower endorsement of external attributions for AVH in BD, and its weaker associations with distress suggest that associated delusional explanations for voices are less of a priority in BD.

Instead, we have tentatively demonstrated that mania and depressive symptoms factor significantly into AVH-related distress in BD, and should be taken into account during treatment planning. This might involve their inclusion in psychoeducation resources for understanding the experience and complexity of AVH in BD, considering mood variation as an antecedent to fluctuations in voices in coping enhancement, or continuities between mood cognitions and voice content or appraisals. Resistance also significantly contributed to distress in BD in our analyses. It should be noted that data are cross-sectional, so resistance does not necessarily cause voice-related distress. However, resistance to voices has been highlighted as having potential to maintain voices, through paradoxical effects of attempts to suppress experience and/or impacts of hostile dialogue in maintaining the experiences (Thomas, 2015). Finding ways to accept voice-hearing experiences has long been proposed as adaptive (Corstens *et al*., 2014). As well as being operationalised in the form of acceptance-oriented therapies (Thomas *et al*., 2013), recent therapy developments have involved in-session role plays comprising active verbal engagement with voices to practise adaptive forms of responding to the experience, through chairwork (Hayward *et al*., 2017), direct therapist engagement with voices (Longden *et al*., 2022), or use of computer-generated avatars to represent voices (Craig *et al*., 2018). Adaptations may be called for in the application of these strategies, as they may relate to AVH experienced in mania as well as depressive episodes, namely, voices which have been described to 'cajole' or 'conspire' with individuals in heightened mood states (Smith *et al*., 2023).

While resistance may be seen as an expected, and even rational, response to an intrusive voice-hearing experience (de Jager *et al*., 2016), increased resistance for some people may stem from concerns about what voices may mean about them or their illness course, or attempts to manage or relate to shifting mood states. Anecdotal accounts may include fears about AVH signifying deterioration, or potential transition to a more 'serious' SCZ diagnosis. In these cases, interventions encouraging a thorough understanding of AVH symptoms or illness beliefs could be

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sufficient in managing distress (Freeman *et al.*, 2013). Another therapeutic avenue lies in exploring how resistance may vary according to acute mood state (i.e. whether its nature and extent differs in mania versus depression), and incorporating these considerations into clinical practice. For instance, given the importance of behavioural (or mental) resistance to voices in BD, clinical approaches that prioritise addressing one's relationship to voices may be especially pertinent (Hayward and Fuller, 2010).

In line with studies in SSDs (Mawson *et al.*, 2010), benevolence was correlated with voice engagement (but not distress). Given this association, further research into benevolently appraised voices may be useful in understanding their potential contribution to the development and maintenance of mania in BD. When coupled with patient reports that benevolent voices in BD may not be entirely positive (Smith *et al.*, 2023), it seems reasonable to suggest that therapeutic intervention in some cases may be warranted. Moreover, working with people to alter their relationships with such voices could perhaps be helpful in influencing behaviours, especially during mania. Similar observations have been made about benevolent voices in SSDs identified as related to reduced treatment-seeking (Favrod *et al.*, 2004). Our call for an added focus on 'positive' voices is therefore in line with proponents asking for increased scrutiny into the impact of such voices (Copolov *et al.*, 2004a; Sanjuan *et al.*, 2004), and not just in BD, given their operation in other disorders.

Limitations of the study

The current study was subject to several limitations. First, combination of our Australian and UK samples may have inadvertently introduced some forms of bias. This was evident in significant group-wise differences in birthplace endorsed, but less visible biases could also exist. Related to this, the Australian and UK sites employed different assessments for mania and depression. Reliance on self-report for acute mania symptoms in the ASRMS was a noted limitation, although this was partially offset by use of the researcher-rated YMRS. Studies have also shown our corresponding mood measures are highly correlated (Reilly *et al.*, 2015; Sajatovic *et al.*, 2015), and statistical steps were taken to ensure comparability in subsequent analyses. More broadly, there were issues that could have affected sample representativeness, and hence, generalisability of current findings. These include possible self-selection into the study owing to greater chronicity or distress related to AVH, as well as inclusion of mixed diagnostic BD subtypes, although the latter is characteristic of heterogeneity typically observed in the disorder. Related to this, there were insufficient numbers of participants on the severe end of the clinical spectrum, in terms of being a psychiatric in-patient and/or endorsing a current mania episode, to allow any meaningful comparisons on whether prevailing patient status or mood state would exert significant influences on AVH phenomenology and associated distress. There was also a possible influence of mood on recall at time of interview, given a small fraction of participants met threshold for mania/hypomania, and significant numbers were likely depressed (Teasdale and Russell, 1983). Yet substance use disorders were excluded and psychiatric medications were documented, although the myriad drugs in varying doses prescribed to manage prominent BD and SCZ symptoms made it difficult to specifically account for medication effects. On the other hand, our study represents a foray into voice phenomenology and beliefs in BD, an under-researched area dominated by SSD studies. Furthermore, our robust participant numbers and conservative statistical approach have yielded findings that may offer fruitful clinical applications.

Directions for future research

Several pertinent avenues for future research exist. First, robust clinical replication is required. Doing this with larger participant numbers, especially across subgroups, will allow for well-powered inclusive consideration of key demographic-clinical variables (note: owing to group-wise

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differences, we re-ran our regression analyses with age as a covariate, but our pattern of significant findings remained unchanged; not shown). Another consideration would be inclusion of other SSD or related diagnoses, such as schizoaffective disorder, which bears commonalities with BD and SCZ in terms of prominent mood and psychosis symptoms respectively. Doing so will introduce complexity as well as nuance to current findings, as well as help inform relevant nosological debates currently troubling the field (Craddock and Owen, 2010; Pearlson, 2015). Related to this, there is a need to account for different BD subtypes and the impact of mania and depressive symptoms in study design and statistical analyses, as current findings have shown that these factors are likely to play an influential role in contributing to AVH-related distress and dimensions of voice beliefs.

Second, current findings suggest that recent attempts to develop phenomenologically defined subcategories of AVH (e.g. McCarthy-Jones *et al.*, 2014) should not overlook seemingly benevolent voices in BD and beyond. There is the added consideration that voices conveying benevolence in tone or content may not actually be positive in intent or function, with a need to segregate voice appraisals from real-life consequences or outcomes, again accounting for fluctuating mood symptoms (i.e. how similarly 'benevolent' voices may be perceived in mania versus depression). More broadly, validated measures to properly assess positive AVH are currently not available, but much needed to spur the field forward. The primary objective of psychological therapies directed at AVH in BD is to help individuals manage the emotional impact of their voices, but this goal will remain elusive, until we can achieve a full and nuanced understanding of what these experiences are truly like, as well as underlying drivers.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S1352465823000395

Data availability statement. The dataset is available on request by qualified researchers and scientists. Requests require a concept proposal describing the purpose of data access, appropriate ethical approval, and provision for data security. All data analysis scripts and results files are available for review.

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