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Predictors of distress associated with psychotic-like anomalous experiences in clinical and non-clinical populations

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Objectives. Psychotic-like anomalous experiences are not inherently distressing, nor do they inevitably lead to clinical conditions. However, distress is an important predictor of onset and relapse in psychosis, and a primary indicator of problematic mental health. This study aimed to identify factors that predict distress across three groups with anomalous experiences.

Design and methods. This study used a cross-sectional design. Participants in 'Diagnosed' (n = 35), 'At Risk' (n = 20), and 'Undiagnosed' (n = 36) groups completed the Appraisals of Anomalous Experiences Interview (AANEX; Brett *et al.*, 2007, *Br. J. Psychiatry*, 191, s23), which taps anomalies experienced, appraisals, and other psychological and contextual variables. A series of ordinal logistic regression analyses was conducted to investigate which variables predicted anomaly-related distress.

Results. Predictors of *higher* distress were anomalous states characterized by changes in awareness and cognitive functioning (rather than more typical positive symptoms), appraisals of experiences as caused by 'other people', and greater attempted control over experiences. Predictors of *lower* distress were 'spiritual' appraisals, greater perceived social support/understanding, greater perceived controllability, and reacting with a 'neutral response'.

Conclusions. While psychotic-like experiences themselves are not necessarily distressing, appraisals and responses to anomalies do predict distress, as do factors relating to the social context. This adds support to the cognitive-behavioural models, and continuum models, of positive psychotic symptoms.

Practitioner points

- The findings suggest that distress is reduced by developing normalizing and validating contexts in which psychotic experiences can be accepted, understood, and shared.
- Recommendation for delivering therapies that promote reappraising and/or accepting psychotic experiences, rather than attempting to control them.

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- The findings reinforce the 'continuum model' of psychosis to help cultivate less stigmatizing, and more normalizing, views of psychotic experiences.
- A limitation is that the samples recruited cannot be assumed to be representative of all people experiencing psychotic-like anomalies.
- A further limitation is that a small number of AANEX items did not achieve satisfactory inter-rater agreement.

The well-documented occurrence of psychotic-like anomalous experiences in the general population (Murray & Jones, 2012; van Os, Hansen, Bijl, & Ravelli, 2000; Verdoux *et al.*, 1998) has prompted research into differentiating the anomalous experiences themselves from their outcomes and clinical consequences. The importance of this distinction is clear when considering that while psychotic experiences such as hallucinations and delusions are increasingly placed on the continuum of normal human experience (Claridge, 1990; Verdoux & van Os, 2002), clinical psychotic conditions continue to have some of the most severe and enduring mental health outcomes, such as high suicide rates, stigmatization, disengagement from society, loss of economic productivity, and poverty (Bentall & Morrison, 2002). Cognitive models regard individuals' appraisals as key mediators in determining the outcome of anomalous experiences. Thus, the experience of hearing a voice, for instance, does not necessarily become a full-blown psychotic symptom unless it is appraised in a maladaptive way. In the cognitive literature, appraisals of experiences as externally generated, personally significant, and uncontrollable, are particularly implicated in the development of psychosis (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001; Morrison, 2001).

One promising research strategy in disentangling experiences, appraisals, and outcomes has been to recruit people in the general (non-clinical) population who report anomalous experiences of an equivalent nature to those with psychosis, but whose lives have not been negatively affected in terms of functioning and well-being; or indeed, whose lives have been positively enhanced by their experiences (Bak *et al.*, 2005; Brett *et al.*, 2007; Heriot-Maitland, Knight, & Peters, 2012; Jenner, Rutten, Beuckens, Boonstra, & Sytema, 2008; Lovatt, Mason, Brett, & Peters, 2010). Recruiting this population, alongside clinical populations, enables the study of anomalies with both problematic and benign outcomes, and gaining insight into the appraisals that may be mediating these different outcomes.

A research tool for measuring anomalous experiences, appraisals, and responses in both clinical and non-clinical populations is the Appraisals of Anomalous Experiences Interview (AANEX; Brett *et al.*, 2007). Brett *et al.* used the AANEX to compare three groups of participants with anomalous experiences: those diagnosed with a psychotic condition; a help-seeking group meeting criteria for an 'at risk' mental state; and those without a diagnosis or a 'need-for-care' (i.e., they were not help-seeking and had never been in need of mental health services in relation to their experiences). They found that the undiagnosed group appraised their experiences as relatively more positive and benign than the two clinical groups, and were less likely to respond to their experiences with avoidant or cognitive control strategies. The groups also differed in the types of appraisal formed, with the undiagnosed group less likely to appraise their experiences as being caused by 'other people' (i.e., personalizing appraisals), and more likely to form 'normalizing' and 'psychological' appraisals (Brett *et al.*, 2007). Similar findings are reported in related studies that have also used diagnostic or clinical status to define comparison groups with anomalous experiences (Gaynor, Ward, Garety, & Peters, 2013; Heriot-Maitland *et al.*, 2012; Lovatt *et al.*, 2010; Ward *et al.*, 2013).

One of the difficulties with investigating outcomes of anomalous experiences merely in terms of diagnostic or clinical status is the presence of additional factors affecting clinical service involvement. For instance, there may be factors around access to services, help-seeking behaviour, and availability of alternative (e.g., family or religious) support, which may also impact clinical status and care pathway (Singh & Grange, 2006). In cognitive approaches to psychosis, distress is deemed to be the primary treatment target (as opposed to symptoms), and has even been regarded as the defining feature of a clinical psychological problem; for instance, Chadwick, Birchwood, and Trower (1996) point out that if a person is not distressed by a symptom of psychosis, then it is not a problem, and there is no rationale for psychological therapy (p. 47). The importance of investigating emotional responses is further highlighted by the considerable interface between emotion and psychosis (reviewed by Freeman & Garety, 2003; Birchwood & Trower, 2006). It is found, for example, that emotional difficulties, such as depression and anxiety, are amongst the strongest predictors of transition to psychosis in high-risk populations, and of relapse in psychosis populations (Owens, Miller, Lawrie, & Johnstone, 2005).

The emotional profile of anomalous experiences is therefore clearly a matter of general clinical importance, not just in relation to psychological therapies. In this article, unlike Brett *et al.* (2007) who reported differences between diagnostic groups as part of the validation of the AANEX interview, we investigated the factors associated with anomaly-related distress, irrespective of clinical or diagnostic status.

Aims

This study aimed to explore the psychological and contextual predictors of distress in relation to anomalous experiences. Cognitive models of psychosis (Garety *et al.*, 2001; Morrison, 2001) stipulate that a number of psychosocial factors predict the transition to psychosis, such as maladaptive appraisals and responses to anomalous experiences, and adverse social environments. We investigated the predictive value of a number of these proposed factors upon distress, included in the AANEX, and previously identified by Brett *et al.* (2007) as being predictive of clinical group status in the same participants.

Hypotheses

The relationships between anomaly-related distress, and the domains of context, appraisal and response, were examined, as there is insufficient existing research to justify only testing specific hypotheses.

In addition, based on cognitive models of psychosis (Bentall *et al.*, 2001; Garety *et al.*, 2001; Morrison, 2001) and previous research (Brett *et al.*, 2007; Heriot-Maitland *et al.*, 2012; Lovatt *et al.*, 2010) outlined above, we hypothesized tentatively that anomaly-related distress would be predicted by the following:

(1) More externalizing appraisals of anomalies.
(2) More personalizing ('other people') appraisals of anomalies.
(3) Less perceived social support/understanding around anomalies.
(4) Less perceived controllability of anomalies.
(5) More attempted control over anomalies.

Method

Participants

The sample consisted of three groups: 'Diagnosed' (D; $n = 35$), 'At Risk' (AR; $n = 20$), 'Undiagnosed' (UD; $n = 36$). Other data from these participants are previously published in Brett, Johns, Peters, and McGuire (2009) and Brett *et al.* (2007).

The 'Diagnosed' group comprised people with a diagnosed psychotic disorder, recruited from two psychosis services in the South London and Maudsley NHS Foundation Trust (SLaM): Psychological Intervention Clinic for outpatients with Psychosis (PICuP) and Lambeth Early Onset (LEO). All participants were known to have received a diagnosis of a psychotic disorder from a psychiatrist in the course of clinical treatment within these specialist psychosis services. LEO participants were approached via nursing staff, who were asked to suggest individuals who were considered able to consent to participate ($n = 26$). Seventeen agreed to take part, but two were subsequently excluded after an examination of medical notes failed to corroborate their own reports of low levels of anomalies. Forty clients in the PICuP research register were invited to participate by letter, of whom 21 accepted. One participant was excluded due to the presence of severe thought disorder at interview that prevented the completion of the AANEX.

The 'At Risk' group consisted of individuals meeting criteria for an At Risk Mental State (ARMS) using the Comprehensive Assessment of ARMS (CAARMS; Phillips, Yung, & McGorry, 2000), recruited from a specialist outreach service in SLaM: Outreach And Support In South London (OASIS). All clients with an ARMS during the recruitment period were invited to participate by telephone or via other colleagues ($n = 30$). Of these, 17 agreed to participate. A further three individuals who were screened for inclusion in the UD group, but met intake criteria for an ARMS, were recruited to the 'At Risk' group. No participant was subsequently excluded.

The 'Undiagnosed' group consisted of people in the Greater London area who reported anomalous experiences, but who had never received diagnoses or been in need of clinical interventions for their psychotic experiences. This group was recruited through advertisements placed with specialist networks and organizations involved with spiritual, psychic, or mystical phenomena (previously described in detail by Brett *et al.*, 2007, 2009).

Exclusion criteria for all three groups consisted of: inability to speak and understand fluent English; a history of neurological problems, head injury, or epilepsy; evidence of current substance dependence; estimated current IQ of <70.

Measures

All measures in this study were derived from the AANEX (Brett *et al.*, 2007), which comprises two sections: (1) the AANEX-Inventory, which assesses the kinds of anomalies experienced by participants; and (2) the AANEX-CAR, which taps the context, appraisals, and responses pertaining to these anomalous experiences. For the AANEX-CAR multiple sets of responses were rated for each participant, anchored to different time points or types of anomalous experience. The number of response sets ranged from 1 to 18, with a mean of 3.7 per person.

AANEX-Inventory (Brett et al.*, 2007)*

Measures of anomalous experiences. The 40-item AANEX-Inventory assesses Schneiderian first-rank symptoms, and anomalies of perception, cognition, and affect. Each item was given a 'state' rating between 0 and 2 (absent, marginal, present), and summarized into four State factors each yielding a continuous score through a principal components analysis (see Brett *et al.*, 2007, 2009). The four State factors, along with their contributing items, are listed in Table 1.

ANNEX-CAR (Brett et al.*, 2007)*

Measures of emotional response (including measure of distress). For each anomalous experience, the emotional response was elicited with the question: 'When you experience(d) [that], how do/did you feel?', with potential follow-up probes. Four categories of emotional response were derived (each rated 1–5 by the interviewer): Negative emotional response; Positive emotional response; Neutral arousal; and Unengaged. The measure for anomaly-related distress was the Negative emotional response score, with ratings of 1 corresponding to 'no negative feelings reported', and 5 to 'only strong negative feelings reported'.

Measures of appraisal. The type of appraisal made by each participant was rated by the interviewer (0–2), according to the extent to which it met the criteria for nine appraisal categories (listed in Table 2). Four dimensions of appraisal were also rated (1–5) of which Externality and Agency are reported in this study.

Table 1. State factors for the kinds of anomalies experienced

State factors	Contributing items
Revelation	Sense of having insights
	Sense of having a 'mission'
	Elation
	Ideas of reference
	Passivity experiences
	Thought pressure
Anomalous perception	Somatic hallucinations
	Visual hallucinations
Awareness/cognitive processes	Depersonalization
	Lost automatic skills
	Oversensitivity to visual/auditory stimuli
	Heightened distractibility
	Receptive language disturbance
	Derealization
Mental boundary	Voice experiences
	Thought transmission
	Thought withdrawal
	Sense of being 'monitored'
	Receptivity to others' thoughts/feelings

Table 2. Predictors of anomaly-related distress

	Predictor variables	OR	95% CIs	*p*-value
State factor scores	Revelation	**0.37**	**0.23–0.59**	**<.001**
	Anomalous perception	0.93	0.78–1.11	.42
	Awareness/cognitive processes	**3.24**	**2.03–5.17**	**<.001**
	Mental boundary	**1.94**	**1.14–3.29**	**.014**
Context at onset	Significant change	1.23	0.76–1.99	.39
	Travel/isolation	2.13	0.93–4.87	.07
	Crisis/impasse	1.23	0.66–2.31	.52
	Drug use	1.02	0.69–1.51	.92
	From childhood	**0.45**	**0.22–0.89**	**.022**
	Trauma	0.51	0.23–1.09	.08
	Religious/spiritual practice	1.17	0.68–2.03	.57
	Cultural context	0.67	0.35–1.28	.22
Appraisal categories	Biological	**1.71**	**1.17–2.50**	**<.01**
	Drug related	1.37	0.75–2.50	.31
	Spiritual	**0.58**	**0.46–0.74**	**<.001**
	Other people	**2.39**	**1.80–3.17**	**<.001**
	Technological	1.12	0.61–2.03	.72
	Psychological	0.92	0.63–1.33	.65
	No interpretation	0.90	0.71–1.14	.39
	Supernatural	1.23	0.93–1.62	.14
	Normalizing	**0.37**	**0.25–0.55**	**<.001**
Appraisal dimensions	Externality	1.02	0.85–1.22	.82
	Agency	**1.29**	**1.06–1.56**	**.01**
Social support	Perceived support/understanding	**0.65**	**0.55–0.76**	**<.001**
Control	Perceived controllability	**0.70**	**0.59–0.83**	**<.001**
	Attempted control	**1.78**	**1.50–2.12**	**<.001**
Cognitive-behavioural response	Avoidance	**1.95**	**1.48–2.57**	**<.001**
	Cognitive control	**1.66**	**1.40–1.98**	**<.001**
	Reappraisal	1.03	0.83–1.28	.78
	Rumination	**1.49**	**1.20–1.85**	**<.001**
	Immersion	**1.30**	**1.10–1.52**	**.002**
	Neutral response	**0.44**	**0.37–0.52**	**<.001**

Note. Significant results in bold.

Measures of other psychological and contextual factors. Context at onset of anomalous experiences; Social support; Control; and Cognitive-behavioural response, were assessed. Eight types of context at onset were rated (0–2) (listed in Table 2). Social support was rated (1–5), according to the degree of perceived support and understanding from others. Control was rated in two ways: Perceived controllability (1 *none* – 5 *total*), and Attempted control (1 *not at all* – 5 *total effort*). Finally, six types of Cognitive-behavioural responses were rated (1–5) (listed in Table 2).

Inter-rater reliabilities for the above variables are reported in Brett *et al.* (2007).

Procedure

Ethical approval was gained from the South London & Maudsley NHS Trust (Bethlem and Maudsley Hospitals) & Institute of Psychiatry Ethical Committee (Research). All

participants gave written, informed consent to participate, and all measures were administered by author CB. All participants received an honorarium for their time.

Statistical analyses

Analyses were carried out using Stata 8.1 (StataCorp LP, College Station, TX, USA). A series of regression analyses was carried out to test the predictive value of each individual phenomenological, contextual, and cognitive-behavioural variable for anomaly-related distress. Since the context, appraisal, and response (CAR) variables were anchored to specific types of anomalous experience, the regression analyses testing those variables controlled for the four state factors in order to hold the effects of different experiences on distress constant. Since diagnostic status significantly predicted distress (with the 'undiagnosed' group showing lower negative emotional responses and higher positive emotional responses than the 'diagnosed' and 'at risk' groups, see Brett *et al.*, 2007), and the groups were sampled independently from different sources, a final multiple regression model incorporating all variables independently predicting distress also controlled for Group.

Since all of the variables being tested were ordinal (either rated between 0 and 2, or between 1 and 5), the analyses testing the relationship of each variable to distress utilized ordinal logistic regression and multiple regression. The confidence intervals for the logistic regression analyses were set at 95%, and the reported *p*-values of predictor variables were based on the Wald statistic. The analyses needed to account for the fact that repeated observations within participants (i.e., appraisals of different kinds of anomalies, or at different time points) were not independent, and therefore robust standard errors computed by clustering data by participant were used. The total sample size was 91 and the total number of observations varied between 320 and 336, depending on missing data for different variables. Therefore, the heuristic of at least 20 observations per independent variable, or $50 + 8m$ (where m = number of IVs), was satisfied for all regression analyses (Green, 1991; Hosmer & Lemeshow, 2013).

Results

Predictors of anomaly-related distress

A multiple ordinal logistic regression was created to assess the predictive value of each State factor score for anomaly-related distress, while holding the other State factors constant. Then, a series of ordinal logistic regression analyses was conducted to investigate which of the other AANEX measures (in Table 2) were significantly predictive of anomaly-related distress, controlling for the four state factor scores. The Negative emotional response (distress) scores were entered as the dependent variable, and each of the other AANEX measures was entered as the explanatory variable, along with the four State factor scores, for each regression (32 regressions in total). Table 2 shows the odds ratios, confidence intervals, and significance level for prediction of anomaly-related distress.

Predictors of anomaly-related distress, controlling for group

A second series of analyses was conducted with the significant AANEX predictors (17 variables) in Table 2 being entered sequentially into the model, in order to test which variables independently predicted distress when accounting for the effects of the others, and controlling for group. The inclusion of multiple predictors increased the standard

Table 3. Significant independent predictors of distress, controlling for group

	Predictor of distress	OR	95% CIs	*p*-value
State factor scores	Awareness/cognitive processes	1.94	1.20–3.16	.007
Appraisal categories	Spiritual	0.55	0.40–0.75	<.001
	Other people	1.85	1.30–2.63	.001
Social support	Perceived support/understanding	0.76	0.63–0.92	.005
Control	Perceived controllability	0.63	0.46–0.88	.006
	Attempted control	1.75	1.43–2.14	<.001
Cognitive-behavioural response	Neutral response	0.53	0.43–0.66	<.001

errors of the model, thereby 'raising the bar' for any predictor to make a significant contribution. Therefore, the variables that made no independent contribution to the model at any stage were dropped, and the model was re-run (leaving seven variables, plus group).

The following predictor variables were entered in blocks: State factors (in addition to Group); the appraisal dimension, 'Agency'; appraisal categories; contextual factors; cognitive-behavioural response. The final model showed the significant independent predictors of distress when including all domains of variables, and excluding those that were no longer significantly predictive (see Table 3).

The predictive value of Group, which remained significant after the inclusion of the State factor scores and 'Agency', became non-significant after the addition of the categories of appraisal into the model ($\chi^2(2) = 4.99$; $p = .08$), although a clear trend towards greater distress in the clinical groups remained. This trend was abolished by the addition of the contextual factors into the model ($\chi^2(2) = 3.20$; $p = .20$), demonstrating that the increased likelihood of distress in the clinical groups was explained by the group differences in phenomenology, dimensions and categories of appraisal, and contextual factors. Specifically, the final model provided support for Hypotheses (ii)–(v), namely that distress would be associated with more personalizing ('other people') appraisals, less perceived social support/understanding, less perceived controllability, and more attempted control. The appraisal dimension of externality was not related to distress, failing to support Hypothesis (i).

Discussion

Main findings

Although a large number of psychosocial variables were found to be associated with distress in the initial analyses, after controlling for Group, the significant predictors of *higher* distress were anomalous states characterized by changes in awareness and cognitive processes, appraisals of experiences as caused by 'other people', and greater attempted control over experiences. The significant predictors of *lower* distress were 'spiritual' appraisals of experiences, greater perceived social support/understanding, greater perceived controllability, and reacting to the experience with a 'neutral response'. These findings provided support for four of our five hypotheses; however, they did not support the hypothesis that 'externalizing' appraisals would predict higher distress. Overall, these findings support the fundamental cognitive approach to psychosis (Bentall *et al.*, 2001; Garety *et al.*, 2001; Morrison, 2001), which deems the appraisal, response,

and social context, rather than necessarily the anomalous experience itself, as the key determinants of emotional consequences.

Experience-related predictors of distress

The only experiential state found to significantly predict distress was the 'awareness/cognitive processes' State factor, which is characterized by changes in the quality of awareness reflecting alterations in attention and information processing (e.g., heightened distractibility, lost automatic skills, oversensitivity to light/sound, and depersonalization/derealization). Interestingly, none of the other State factors, namely, revelation, anomalous perception, and mental boundary, was predictive of distress. The experiences comprising these non-significant State factors include auditory/visual/somatic hallucinations, reference experiences, and thought transmission. The implication, therefore, is that these experiential states, which are central aspects of psychosis symptomatology, are not inherently distressing, unlike the more subtle changes in ability to 'think straight' and keep a 'cognitive grip'.

The other significant experience-related predictor of distress was their 'perceived controllability'. This finding is consistent with reports from healthy voice-hearers (Daalman *et al.*, 2011), and with previous literature that highlights the role of controllability in determining the outcome of experiences (Freeman & Garety, 1999). In this study, there may be some connection between the two predictors, 'awareness/cognitive processes' and 'perceived controllability', because altered, dissociative states, such as depersonalization and changes in attention and cognitive functioning, may be inherently accompanied by the sense of loss of personal control. The finding that a reported lack of control over voices is related to a gating deficit (Kumari *et al.*, 2008) would support the potential link between perceived controllability and subtle alterations in cognitive processing. This is likely to be more threatening and distressing for people who are more predisposed to expectations of control and consistency of mental contents, as personal and cultural metacognitive beliefs are likely to impact on appraisals of the experience.

Appraisal- and context-related predictors of distress

The finding that distress was predicted by 'other people' appraisals, but not by the externality dimension, aligns to Brett *et al.* (2007) and Lovatt *et al.* (2010) previous findings that clinical groups are also distinguished by personalizing specifically, rather than externalizing appraisals more generally. These similarities are perhaps not surprising, bearing in mind that distress is a strong predictor of group status, although group was controlled for in the present study. However, Daalman *et al.* (2011) also reported similar findings in a study of auditory hallucinations, where their psychosis and healthy participants did not differ in externalizing appraisals. The lack of relationship between distress and externalizing is particularly interesting as it implies a case for refinement to the existing cognitive models of psychosis. The models of Garety *et al.* (2001) and Bentall *et al.* (2001), for instance, emphasize the role of external appraisals in the transition from anomalous experiences to clinical problems. While an 'other people' appraisal is one example of an externalizing appraisal, our results suggest that its predictive effect upon distress is unrelated to its externalizing nature. Furthermore, 'supernatural' appraisals, which are also examples of appraisals with an external source, were also not significantly predictive of distress. Taken together, these findings suggest

that an externalizing appraisal *style* is not as important in predicting distress (or group membership; Brett *et al.*, 2007; Lovatt *et al.*, 2010) as the externalizing appraisal *content*, particularly the sense of interpersonal threat (Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002).

Our findings also provide further refinement to Morrison's (2001) model, by narrowing down which specific aspect of 'cultural unacceptability' may be relevant in determining problematic outcomes. The other significant appraisal-related finding was that a 'spiritual' appraisal was protective against distress. Spiritual appraisal is one example of an appraisal with cultural acceptability, since there is established acceptance of the concept of spiritual influence on people's lives. Particularly in some subcultures, there is the concept of a spiritual path or guidance, often accompanied by a sense of positive purpose or meaning, or a sense that the path or guidance is for a good, even if as yet unclear, spiritual reason. In contrast, the belief that one's fate may be determined by humans not only lacks cultural acceptability (outside of conspiracy theories) but also lacks the same positive sense of meaning for the individual. Other people's intentions and influences are more likely to be perceived as imposed and threatening, with greater potential for distress, and these kinds of appraisal may reflect a sense of social powerlessness or victimization based on marginalized, minority or low social status, or experiences of interpersonal trauma (Boydell *et al.*, 2001; Fisher *et al.*, 2013; Mirowsky & Ross, 1983). This suggestion is congruent with the finding by Lovatt *et al.* (2010) that interpersonal trauma predicted 'other people' appraisals of anomalies, and highlights the importance of both the cultural and emotional context in which an experience is appraised. An important protective feature of a spiritual appraisal against distress may be the contextualization within an established and accepted cultural framework of understanding, which also brings shared experiences, validation, and support.

This point is supported by the additional significant finding that 'perceived social support and understanding' was predictive of lower distress. It may be that many of the emotional benefits of a social group come through support, advice, and companionship, but it is also likely that perceived understanding and acceptance within a social context bring validation and normalization to people's experiences. These have been previously emphasized as protective factors following anomalous experiences (Brett, 2010; Heriot-Maitland *et al.*, 2012), and can particularly reduce distress experienced around social stigma and shame.

Response-related predictors of distress

The main findings regarding participants' responses to anomalous experiences were that higher distress was predicted by greater attempted control, and lower distress was predicted by more neutral responses, which were characterized by not actively pursuing the experiences, preventing them, or intellectually exploring them. These two findings are complementary in that a more accepting, passive style of responding was more helpful than an active style. These results are consistent with findings that healthy individuals with psychotic experiences are less likely to use safety behaviours to control their experiences (Gaynor *et al.*, 2013), and more likely to report adaptive coping strategies (Ward *et al.*, 2013), than clinical groups.

This aligns to some key principles of CBT for psychosis (CBTp), since unlike traditional CBT for emotional disorders, CBTp has an overall emphasis on reducing distress and changing the relationship between the individual and their experiences, often using metacognitive strategies, rather than challenging cognitions directly (Birchwood &

Trower, 2006; Morrison & Barratt, 2010; Peters *et al.*, 2010). These findings also support the aims of 'third wave' cognitive-behavioural therapies (Hayes, 2004), which collectively embrace the therapeutic principles of mindfulness and acceptance. Third wave approaches (acceptance and commitment therapy [Hayes, Strosahl, & Wilson, 1999], mindfulness-based cognitive therapy [Segal, Williams, & Teasdale, 2002; Chadwick, 2006], and compassion-focused therapy [Gilbert, 2009]) are focused exclusively on addressing the individual's relationship to their thoughts and feelings. One of the proposed key elements in this relationship is noticing and accepting psychological events, rather than trying to control or challenge them. For example, Chadwick (2006) has promoted the use of mindfulness for distressing psychosis by changing one's relationship to anomalous experiences and accepting them as transient, in order to reduce patterns of response that may maintain distress. Interestingly, in a review of recent developments in CBTp, Tai and Turkington (2009) point out that it is debateable whether the practical applications of third wave approaches differ significantly from good CBTp.

Implications and limitations

This study looked at predictors of anomaly-related distress, both when treating the whole sample as a continuous group, and when controlling for diagnostic status. This approach was used because a multitude of factors determine whether an individual receives psychiatric treatment, a diagnosis, or is admitted to hospital. In addition to the distress and incapacity experienced by the individual, there are factors involving their social context and responsibilities that determine how the people around them respond to their behaviour. Since intra-individual factors alone do not determine diagnostic status, a straightforward comparison of the phenomenology and cognitive processes of diagnosed and undiagnosed individuals, though clinically important, may obscure some associations between these factors and the responses and internal processes of the person. Controlling for diagnostic status, as was done in the final model, allowed us to see which factors predicted distress whether a person was in receipt of a diagnosis or treatment for psychosis.

In addition to the theoretical implications for the refinement of cognitive models highlighted above, there are a number of clinical implications of this study. The importance of distress in psychosis is emphasized in the introduction as being both a predictor of onset and relapse in psychosis (Owens *et al.*, 2005) and as the defining feature of a psychological problem (Chadwick *et al.*, 1996). Therefore, in identifying the psychological and contextual predictors of distress following an anomalous experience, this study has implications for the prevention of psychosis in non-clinical and at-risk populations with anomalous experiences, and for the treatment of psychosis in clinical populations. According to these findings, risk detection and preventative interventions might be particularly focused on individuals who form 'other people' appraisals for their experiences, and who experience some alteration in their state of awareness, accompanied by a reduced perception of controllability. The raised likelihood of distress for these individuals can be quickly recognized by services and addressed by facilitating the development of appraisals, responses, and contexts that are found to be protective in this study.

One of the major protectors against distress identified was people having a suitable context in which to make sense of their experiences, so that their appraisals are culturally and socially acceptable. The implication for treatment is to provide, or facilitate access to, normalizing and validating contexts in which the experiences can be accepted, understood, and shared. This might include access to spiritual networks and organizations

to help people form protective spiritual appraisals, or to models that construe some forms of psychotic experience as 'transformative crises' with meaning and purpose. There are other ways of providing similarly validating contexts within services; for example, the 'Maastricht' approach to hearing voices (Romme & Escher, 1989, 2000) involves accepting and working with auditory hallucinations to connect with their personal meaning and function. Along these lines, there are also implications for broader societal interventions to reduce stigma and increase social understanding around psychotic phenomena. Perhaps stigma campaigns could do more to emphasize the normal distribution of psychotic-like experiences in the general population (van Os *et al.*, 2000). In terms of coping with experiences, the main clinical implication of this study is to offer CBTp and third wave mindfulness-based therapies, which promote the acceptance of experiences, whilst discouraging active resistance through safety strategies that attempt to control the experiences.

One limitation of this study is that distress was measured as a single subjective rating of negative emotional response, rather than a more fine-grained coding of different types of negative emotional response. This could perhaps be an aim of future research, and follow-up studies could also distinguish between types of distress, such as anxiety based and depression based, or relating to specific emotions such as shame and anger, and could also do more to identify different sources of distress, for example, experience related, context related, or stigma. Another limitation is the inter-rater reliability of the AANEX (reported in Brett *et al.*, 2007), with a small number of interview items (specifically the coping items) not achieving satisfactory inter-rater agreement. Therefore, these findings should be interpreted with caution, and replicated where possible. Lastly, it is possible that the non-clinical group may not have been representative of the wider population of individuals experiencing psychotic-like anomalies, as they were recruited via a limited number of sources within London and the south of England. Replication with a wider sample drawing from different geographical and subcultural populations could elucidate whether the findings of the current study are more broadly generalizable.

With a more thorough and detailed investigation of distress in relation to anomalous experiences, informed by the findings of this study, we may be able to better understand and influence the transition from 'normal' human experiences to either positive life-enhancing outcomes, or to devastating clinical conditions.

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