Are negative beliefs about psychosis associated with emotional distress in adults and young people with such experiences? A meta-analysis

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Objective. Emotional distress, including depression and anxiety, is commonly reported amongst individuals experiencing psychosis. The beliefs individuals hold about the meaning of their psychosis may explain the distress they experience. The current meta-analysis aimed to review the association between beliefs about psychosis experiences and emotional distress.

Method. Three electronic databases (PsycINFO, MEDLINE, and CINAHL) were searched using keywords and controlled vocabulary (e.g., Medical Subject Headings) from date of inception to August 2019. A total of 19 eligible papers were identified.

Results. Our random-effects meta-analysis revealed that depression and anxiety held moderate association with psychosis beliefs, with perceptions concerning a lack of control over experiences having the strongest association with distress. Longitudinal studies suggest that negative beliefs at baseline are associated with depressive symptoms at follow-up.

Conclusions. The results suggest that the endorsement of negative beliefs about psychosis is associated with current level of depression and anxiety. The results are consistent with theories of emotional distress in psychosis. However, the small number of longitudinal papers limits what can be concluded about the direction or other temporal characteristics of these relationships. Therapies that target unhelpful beliefs about psychosis may beneficial.

Practitioner points

- Negative beliefs about experiences of psychosis are associated with greater emotional distress such as depression and anxiety.

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- Beliefs about a lack of control over experiences had the strongest association with distress.
- Interventions that aim to modify or prevent the formation of unhelpful beliefs about psychosis may be beneficial for this population.

Severe mental health difficulties (SMHDs) can encompass a range of mental health experiences including psychosis and bipolar disorder. For many individuals, these experiences can have an impact on their social and occupational life, with evidence suggesting that they can result in reduced opportunity for work, social engagement, and increased health risks (Aguinaga-Ontoso, Brugos-Larumbe, & Guillén-Aguinaga, 2019; Chang, Huang, Chiu, Tang & Su, 2016; Rinaldi *et al.*, 2010; Smith, Langan, Mclean, Guthrie, & Mercer, 2013; Stain *et al.*, 2012). In addition, emotional distress appears common in individuals experiencing SMHD, with many having co-occurring difficulties with depression, anxiety, and self-harm (Challis, Nielssen, Harris, & Large, 2013; Heald, Morris, & Soni, 2008; Jones *et al.*, 2018; Pallanti, Cantisani, & Grassi, 2013; Pavlova, Perlis, Alda, & Uher, 2015; Saraf *et al.*, 2017). Research suggests that for those diagnosed with schizophrenia spectrum disorders, comorbid depression is present in approximately 50% of patients (Buckley, Miller, Lehrer, & Castle, 2009), whilst comorbid anxiety disorders are estimated to occur in 38.3% of individuals (Achim *et al.*, 2011) and the lifetime prevalence of self-harm (with or without intent to die) is approximately 30% (Mork *et al.*, 2013). For those diagnosed with bipolar disorder, evidence suggests that up to 60% of individuals will engage in self-harm at least once during their lifetime (Jones *et al.*, 2018) with the lifetime prevalence of anxiety disorder said to be at 45% (Pavlova *et al.*, 2015). Whilst depressive symptoms are an intrinsic part of bipolar disorder, it could still be suggested that the way individuals make sense of these difficulties could contribute to the risk of further, secondary depression, or the exacerbation of current depressive symptoms (Birchwood, Mason, MacMillan, & Healy, 1993). Given the prevalence of depression, anxiety, and self-harm in individuals experiencing SMHD, it is important to better understand the factors which may contribute to these problems. The personal beliefs individuals develop about the meaning and consequences of their SMHD (e.g., psychosis) have been suggested as one factor that might explain the emotional distress individual's experience (Birchwood, Iqbal, & Upthegrove, 2005). A synthesis of the literature concerning the association between beliefs about SMHD and emotional distress is needed to determine the weight of the evidence regarding the role of these beliefs in distress. This information will in turn inform the focus of interventions for those with SMHD.

There is evidence that individuals affected by psychosis engage in a process of trying to understand and make sense of these experiences (Byrne & Morrison, 2010; Walsh, 2015). This process can lead individuals to endorse negative beliefs about the meaning of their experience (e.g., 'I will not be able to work again'; Taylor, Pyle, Schwannauer, Hutton, & Morrison, 2015). In a series of qualitative studies, those experiencing SMHD (e.g., psychosis and bipolar disorder) reported that their experiences had affected their personal development (e.g., occupational roles were maintained or achieved; Granek, Danan, Bersudsky, & Osher, 2016; Wagner & King, 2005). The literature investigating beliefs about SMHD suggests that individuals can endorse a number of negative attributions, such as viewing their experience as inhibiting future opportunities (e.g., for employment) and viewing the self as inferior and defective (e.g., 'my experiences may mean that I should be kept away from others'; Pyle, Stewart, *et al.*, 2015; Taylor, Pyle, *et al.*, 2015). Psychosis is also often appraised as a source of loss, humiliation, and external shame (e.g., feeling embarrassed to talk about experience; Rooke & Birchwood, 1998; Taylor, Pyle, *et al.*, 2015). Similar meaning-making processes have also been reported in

those at risk of developing psychosis (at-risk mental state, ARMS; Yung *et al.*, 2003), with individuals reporting concerns around the meaning of their experiences and 'going mad' (Byrne & Morrison, 2010). The latter study also reported that participants felt that perceiving themselves as 'not normal' was related to social anxiety, suggesting a possible link between beliefs about psychosis experiences and emotional distress.

It has been argued that the way in which we think about health and illness may have an impact upon our emotional and behavioural responses to such experiences, which can then in turn impact on health and social outcomes (Leventhal, Nerenz, & Steele, 1984). The self-regulation model (SRM; Leventhal *et al.*, 1984) has been successfully applied to understanding health beliefs, behaviours, and outcomes across a number of physical health problems (see Hagger & Orbell, 2003, for a review). A number of studies (Lobban, Barrowclough, & Jones, 2004, 2005; Watson *et al.*, 2006) have applied this model to explore illness representation (the way illness and health is represented by the individual, including the beliefs held about a particular condition) in psychosis. However, Kinderman, Setzu, Lobban, and Salmon (2006) suggest that we need to be cautious in applying understandings about physical health models to mental health. They note that physical illness can typically be viewed as being separate from the self, whereas mental health difficulties are closely bound up with one's sense of self.

Drawing on constructs from self-identity (Estroff, 1989) and social rank theory (Gilbert & Allan, 1998), Birchwood *et al.* (2005) have developed a theory that focuses more specifically on mental health and how these problems interact with one's sense of self. In the current review, we use Birchwood and colleague's framework and focus on measures of belief linked to this underlying theoretical framework. Birchwood, Iqbal, and Upthegrove (2005) suggest that certain life events can be viewed as depressogenic, especially when events are appraised as resulting in loss, humiliation, and feelings of entrapment. They argue that psychosis can be viewed as such a life event and can encompass all these potential qualities. Specifically, they make reference to the potential impact of psychosis on individuals' relationships and personal achievements, where psychosis is seen to result in a loss of future aspired goals or roles and can leave the individual struggling to assert their identity. Depression may therefore result from the way in which individuals appraise their psychosis experiences, especially where psychosis is seen negatively in terms of loss. Similarly, anxiety may be exacerbated by threat-related appraisals associated with experiences of psychosis. These could include social threats, for example loss of social standing (Gilbert, 2000) or fear of stigma leading to negative reactions from others (Birchwood *et al.*, 2007). Appraisals of experiences that relate to a greater sense of uncertainty, lack of control, or further adverse events (e.g., hospitalization or 'going mad') could also contribute to anxiety (Grupe & Nitschke, 2013).

Whilst the main focus of intervention has often been on treating psychotic symptoms, depression and anxiety in the context of SMHD are also important clinical outcomes because they can impact on symptoms severity and can have a negative impact on wider well-being (Hartley, Barrowclough, & Haddock, 2013). The current meta-analysis aimed to help identify beliefs most strongly associated with distress, which can in turn inform interventions aimed at reducing the emotional distress associated with SMHD.

To the best of our knowledge, the current meta-analysis is the first of its kind. It aimed to investigate whether (1) negative beliefs about SMHD (conceptualized within the current review as psychosis and bipolar disorder) are associated with emotional distress (defined as depression diagnosis/symptoms, anxiety diagnosis/symptoms, and self-harm with and without suicidal intent) and (2) to quantify the direction and magnitude of this relationship. We hypothesized that negative beliefs about SMHD will have a positive

association with depression, anxiety, and self-harm. A further narrative synthesis aimed to summarise evidence from longitudinal studies, where available. We also reviewed whether associations between beliefs and distress held when adjusting for psychotic symptoms severity. We adopted a definition of SMHD, which encompassed those in the ARMS population and those diagnosed with bipolar disorder as well as schizophrenia spectrum disorders. This approach was informed by the early work on beliefs about psychosis, which considered this a process common to those with schizophrenia and bipolar diagnoses (Birchwood *et al.*, 1993). In line with this broad approach, we also included studies of individuals with diagnoses of schizoaffective disorder, delusional disorder, and psychosis not otherwise specified. Taking this broad approach also allowed us to consider whether evidence was stronger for some populations than others and whether there was any indication of differences in results between populations. We acknowledge that not all individuals in the ARMS population will go on to develop psychosis. We therefore also ran meta-analyses that excluded ARMS samples to ascertain how this affected the overall results. We also carried out a separate narrative synthesis of the studies involving the ARMS and bipolar populations.

The population of interest included all adults and young people with a diagnosis of schizophrenia, or bipolar or those meeting criteria for early intervention service or who are deemed at risk of developing psychosis (i.e., ARMS). Only publications exploring beliefs about psychosis using either the Personal Beliefs about Illness Questionnaire (PBIQ; Birchwood *et al.*, 1993), Personal Beliefs about Illness Questionnaire-Revised (PBIQ-R; Birchwood, Jackson, Brunet, Holden, & Barton, 2012), or Personal Beliefs about Experience Questionnaire (PBEQ; Pyle, Stewart, *et al.*, 2015) were included in this review. These measures were developed specifically to address beliefs about psychosis (including ARMS) and bipolar disorder (rather than being adapted from physical health models). The review adheres to PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009).

Method

Search strategy

The review protocol was registered via PROSPERO (CRD42018103398) after electronic databases had been searched and author ER had completed the screening process. A change to the original protocol was the addition of further assessment of outcomes based on the GRADE approach (see below). Electronic databases PsycINFO, MEDLINE, and CINAHL were all searched by ER from the earliest available date up to April 2018. These searches were repeated for the period between January 2018 and August 2019. Search terms were developed, in consultation with an information retrieval expert based at a University library, using both keywords, and controlled vocabulary (e.g., MeSH terms) individual to each database.

The following keywords were used: Psychos*, schizo*, Bipolar, Manic, mania, cyclothymi*, UHR, ARMS, "at risk", "clinical high risk" AND "illness perception", "illness appraisals", "health beliefs", "Personal beliefs", PBIQ, "illness beliefs", PBEQ, PBIQ-R AND "Self-harm", suicid*, "self-injury", "suicidal ideation", "self-mutilation", DSH, NSSI, Overdose, "Self-cutting", "Self-poisoning", depress*, "low mood", dysphoria, "emotional dysfunction", hopelessness, anxi*, phobia, PTSD, "stress disorder". Abbreviations of terms (e.g., UHR) were also searched for in full (e.g., 'Ultra High Risk'); see Table S1 for full list of search terms.

After removing duplicates, publications were then independently screened against the inclusion/exclusion criteria by authors ER and ZG. Discrepancies were resolved via discussion. The process began by first screening titles, followed by abstracts and then the full text of remaining papers. Secondary sources (conference abstracts, dissertation thesis) were searched for electronically as part of the main search strategy, and unpublished data were sought through emailing corresponding authors of each of the included publications; however, no additional data were received. The reference lists of included papers were also hand-searched by ER to identify any further eligible publications.

Inclusion and exclusion criteria

To be included in the review, each study needed to be looking at beliefs in the following groups: (1) ARMS (Yung *et al.*, 2003) for psychosis as confirmed through standardized assessments (e.g., CAARMS), (2) adults and young people with a diagnosis of schizophrenia or bipolar disorder, and (3) individuals meeting criteria for care of early intervention service. Only measures linked to Birchwood and colleague's theoretical framework were included, namely the PBIQ (Birchwood *et al.*, 1993), PBIQ-R (Birchwood *et al.*, 2012), or PBEQ (Pyle, Stewart, *et al.*, 2015). The PBEQ has been validated for use with ARMS populations, whilst the PBIQ has been validated for use in bipolar disorder (Pyle, Stewart, *et al.*, 2015; Taylor, Pyle, *et al.*, 2015); however, further psychometric work is needed. Publications also needed to be measuring psychological distress operationalized as (1) depressive symptoms/depression diagnosis, (2) anxiety symptoms/anxiety diagnosis, and (3) self-injurious thoughts and behaviours including those with and without suicidal motive or intent. Studies that involved a comorbid diagnosis where there was a comparison group without this comorbidity were included (e.g., psychosis and social anxiety compared with psychosis without social anxiety). Books, book chapters, qualitative studies, and publications not written in English were excluded. No restrictions were placed on the age of included sample.

Data extraction and outcomes

Data regarding study characteristics (e.g., type of distress and belief measures), sample characteristics (age, gender, primary diagnosis), study design, and effect size data were extracted by author ER using a pre-specified extraction form. All data pertinent to meta-analytic calculations were also extracted independently by author AJ. All disagreements were resolved through discussion with a third author (PJT). The primary outcomes were (1) depression diagnosis/symptoms, (2) anxiety diagnosis/symptoms, and (3) self-injurious thoughts and behaviours including those with and without suicidal intent. The correlation coefficient (r) was used as the metric of effect size. The included studies either reported associations (as a within-group correlation) between beliefs and outcomes or reported mean difference in outcomes of interest. Where mean differences were reported, the mean and *SD* values for each group were extracted, and these were then transformed at a later stage to correlation coefficients (r) using guidance provided by Borenstein, Hedges, Higgins, and Rothstein (2009).

Risk of bias assessment

Studies were assessed for risk of bias using a tool for observational research, adapted from the Agency for Healthcare Research and Quality (AHRQ; Williams, Plassman, Burke, Holsinger & Benjamin, 2010), used widely in other reviews of observational research (e.g., Taylor, Hutton, & Wood, 2015). This tool allows for the assessment of study quality parameters which include recruitment procedures, sample size and the quality of predictor, and outcome measures utilized. Risk of bias assessments were carried out by ER and AJ, with disagreements addressed through consultation with a third author (PJT). Due to the small number of studies included in any one meta-analysis, formal statistical assessment of publication bias could not be undertaken.

Data synthesis and analysis

A random-effects model was chosen in advance as studies were expected to differ in regard to their use of distress and belief measures, sample, and the participant characteristics. The restricted maximum-likelihood (REML) estimator was used, as it has been suggested this may be more suitable for continuous outcomes compared with the widely used DerSimonian and Laird (DL; 1986) estimator (Veroniki *et al.*, 2014). A sensitivity analysis repeating all meta-analyses using the DL estimator did not lead to any substantive differences in results.

Correlation coefficients were converted to Fisher's z before the random-effects meta-analysis was conducted, and the resulting aggregate effect and confidence intervals were converted back into a correlation coefficient, following the procedures outlined by Borenstein *et al.* (2009). The I^2 statistic is used as an estimate of inconsistency, capturing the proportion of variance across studies that is due to heterogeneity rather than sampling error (Higgins, Thompson, Deeks, & Altman, 2003). A value of 25% is indicative of low heterogeneity, and $I^2 > 75\%$ is considered to indicate the presence of a 'high' degree of inconsistency (Higgins *et al.*, 2003). Meta-analyses were performed on STATA (version 14; StataCorp, 2015) using the Metaan command.

We undertook separate meta-analysis to examine the aggregated association between each cluster (e.g., subscales of stigma/shame) and each outcome (e.g., depression). Whilst the same family of scales were used in all studies (starting with the PBIQ; Birchwood *et al.*, 1993), the specific labels used to describe the subscales of these measures differed across the different versions. Therefore, before data extraction began the subscales were clustered together based upon common item content and theoretical overlap. Subscales which appeared to be capturing similar constructs were grouped (clustered) together. For example, the subscales 'shame' and 'stigma' appeared to have items which captured similar beliefs around psychosis being a social judgement and so were group together within the same analyses (see Table 1). Effect sizes for individual studies are reported in Table S2.

Quality assessment of meta-analysis outcomes

In addition to study-level ratings of risk of bias, a rating is also provided of the overall quality of each meta-analysis estimate. This was done by drawing on the GRADE approach (Guyatt *et al.*, 2008, 2011). Following GRADE guidelines, each meta-analysis estimate was given an overall rating (high, moderate, low, very low) reflecting the level of confidence we have in this effect estimate (https://gdt.gradepro.org/app/handbook/handbook.htm). All estimates start at 'high' but then are down-rated based on the following domains: risk of

Table 1. Clustering of the subscales of the belief measures (PBIQ, PBIQ-R, and PBEQ)

Cluster	Subscales included	Definition	Example items
Self as illness	Self as illness (PBIQ); Attribution of behaviour to self or illness (PBIQ); self as abnormal/self as experiences (PBIQ-R); internal shame and defectiveness (PBEQ)	Assess the extent to which the experience is perceived as reflecting a problem with the self.	'There is something about my personality that causes my illness'
Control over illness	Control over illness (PBIQ; PBIQ-R); entrapment (PBIQ); control over experiences (PBEQ)	Assess the extent to which individuals feel able to control their experience.	'I am powerless to influence or control my illness'
Shame	Stigma (PBIQ); shame (PBIQ, PBIQ-R, PBEQ); external shame (PBEQ)	Captures the perception that the experience is a social judgement upon the individual	'I am embarrassed by my illness'
Social containment	Social containment (PBIQ, PBEQ); humiliation (PBIQ); social marginalization (PBIQ-R); group fit (PBIQ; PBIQ-R)	Captures the perception of needing to be contained (kept away from others) as a result of experience	'Society needs to keep people like me who have this illness, apart from everyone else'
Negative expectations	Expectations (PBIQ); loss ((PBIQ, PBIQ-R); loss of expectations (PBEQ)	Captures perceived loss of autonomy and social roles	'My illness is too brittle or delicate for me to work or keep a job'
Negative appraisals of experiences	Negative appraisals of experiences (PBEQ)	Captures negative appraisals relating to impact of experience on current/future self	'I am capable of very little as a result of my experiences'
Entrapment	Entrapment (PBIQ-R)	Captures perceptions of being entrapped by experience, unable to plan for the future.	'I feel trapped by my illness'

Note. PBIQ = Personal Beliefs about Illness Questionnaire; PBIQ-R = Personal Beliefs about Illness Questionnaire-Revised; PBEQ = Personal Beliefs about Experiences Questionnaire.

bias; inconsistency of results; and imprecision. Notably, the GRADE system also uses criteria relating to indirectness (i.e., how directly the estimate addresses the research question), but this domain was deemed redundant since the inclusion and exclusion criteria of the review meant all studies were equally relevant to the research question. Similarly, the small number of studies included in the meta-analyses precluded formal test of publication bias, and so this domain was also not used in the assessment of quality. Quality ratings were made by the first author but reviewed and discussed by the wider research team.

For risk of bias, estimates were down-rated one level (e.g., from high to moderate) if two or more domains within the risk of bias tool were marked as not being met (a rating of 'no') in the risk of bias tool for >50% of studies contributing to that estimate. Quality ratings were down-rated two steps if three or more domains in the risk of bias tool were not met for >50% of studies. Risk of bias domains that did not relate to the meta-analysis estimate (i.e., control for confounding variables) were not counted in this assessment. For inconsistency, estimates were down-rated one level when the I^2 statistic suggested a high level of inconsistency ($I^2 > 75\%$). For imprecision, estimates were down-rated one step if the upper and lower confidence intervals were so broad as to create uncertainty about the likely size and clinical meaning of the association. In practice, we considered this the case if the upper and lower confidence intervals differed by $r > .20$. This interval was chosen as it represents the difference between what might classes as a small and a moderate effect ($r = .10$ vs. .30), or a moderate and large effect size ($r = .30$ vs. .50).

Results

Study characteristics

The results of the literature search are presented in Figure 1. A total of 19 studies, contributing 65 effect sizes, were included in this review. A summary of study characteristics is presented in Table 2. Eleven studies employed a cross-sectional design, and nine studies employed a cross-section/longitudinal design. The majority of studies took place in Europe ($k = 17$) followed by the United States/Canada ($k = 2$). Across studies, there were a greater number of male participants compared with female participants. The PBIQ was used most frequently to capture beliefs ($k = 12$) with two of these studies utilizing only the 'self as illness' subscale. Samples varied in terms of clinical status, including schizophrenia spectrum disorder ($k = 10$), first-episode psychosis ($k = 4$), ARMS ($k = 2$), bipolar disorder ($k = 1$), mixed sample; schizophrenia and ARMS ($k = 1$), dual diagnosis; schizophrenia and substance use disorder ($k = 1$), mixed sample; and schizophrenia and bipolar disorder ($k = 1$).

Risk of bias assessment

The risk of bias assessment is presented in Table 3. A common issue amongst the papers included in this review was a lack of information relating to missing data. Whilst it was clear that missing data were evident across some studies, no comments were made as to how this was managed (e.g., the use of imputation strategies to minimize bias). Missing data can bias results, particularly if this is not missing at random (e.g., those who endorse more negative beliefs or who experience higher levels of depression might be more likely to produce missing data; Ibrahim, Chu, & Chen, 2012). A number of studies failed to clearly articulate how the sample was selected and so we are not able to appropriately
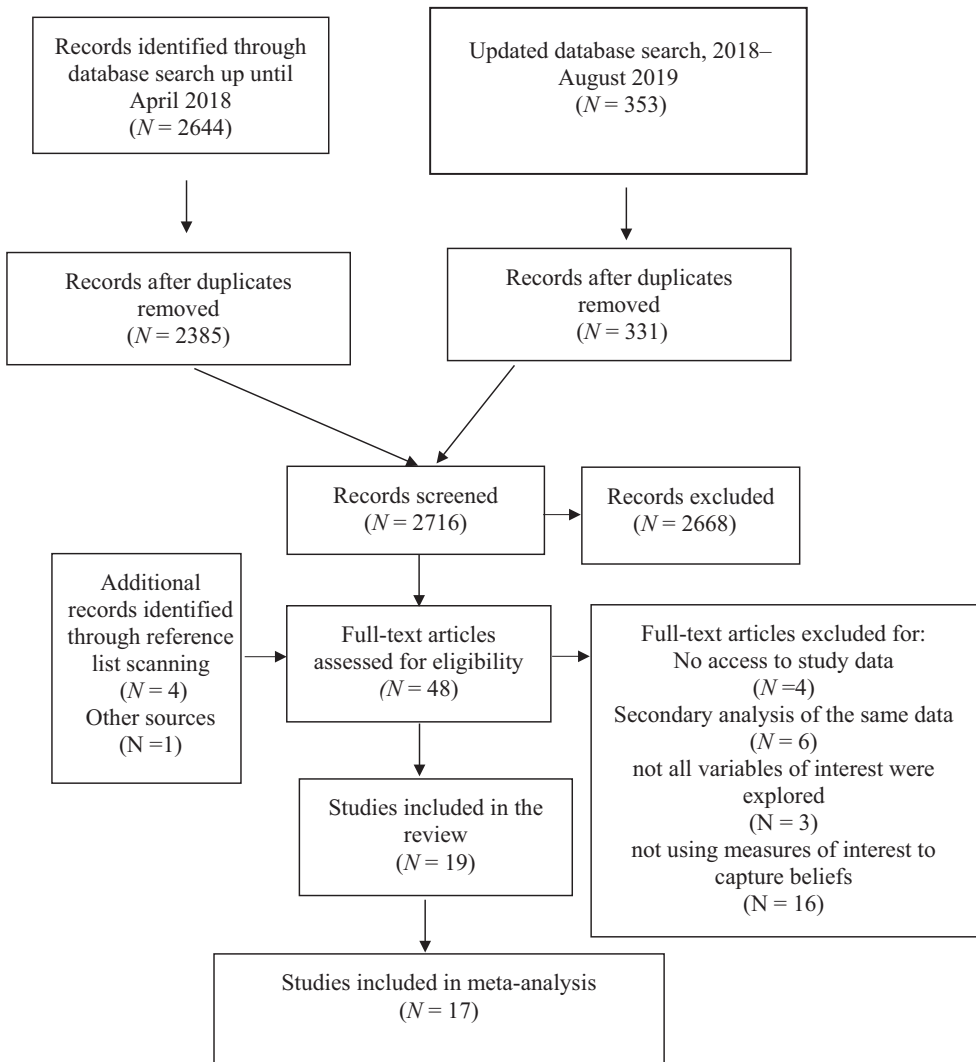
Figure 1. Flow chart detailing literature search process and results.

assess the potential risk of self-selection. Overall, valid methods were utilized for assessing outcomes; however, a number of studies used cut-off criteria to group individuals into depressed versus non-depressed groups. This can be a problem as measures such as the Beck's Depression Inventory (Beck & Steer, 1993) were not designed as diagnostic tools and may not group participants appropriately. Finally, many of the studies failed to address confounding variables, and given the nature of the study designs used, the presence of confounding variables cannot be dismissed. This can impact upon the conclusion which can be drawn about the association between beliefs about psychosis spectrum disorders and emotional distress.

Table 2. Characteristics of included studies (*n* = 19)

Author(s) (year) Country	Design	Sample	Sample characteristics	Beliefs measure	Distress measure
Acosta *et al.* (2013) United Kingdom	Cross-sectional, within	ICD-10 schizophrenia	N = 60 (45 males) Mean age = 31.1 years SD = (8.1)	PBIQ (Birchwood *et al.*, 1993)	Calgary Depression Scale for Schizophrenia (CDSS; Addington *et al.*, 1993) Suicide attempt history (measure not stated)
Birchwood *et al.* (1993) United Kingdom	Cross-sectional, between	Schizophrenia and bipolar disorder	N = 84 Depressed group: Mean age = 43 years SD = (14.3) Not depressed group: Mean age = 48.2 years SD = (14.3)	PBIQ (Birchwood *et al.*, 1993)	Becks Depression Inventory (BDI; Beck & Steer, 1993)
Birchwood *et al.* (2005) United Kingdom	Cross-sectional, within	Acute first-episode psychosis conforming to ICD-10 criteria for schizophrenia.	N = 26	PBIQ (Birchwood *et al.*, 1993)	Calgary Depression Scale for Schizophrenia (CDSS; Addington *et al.*, 1993)
Birchwood *et al.* (2007) United Kingdom	Cross-sectional, between	ICD-10 schizophrenia or related disorders	N = 79 (61 males)	PBIQ (Birchwood *et al.*, 1993)	The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998)
Birchwood *et al.* (2012) United Kingdom	Cross-sectional, within and longitudinal	First-episode psychosis- ICD-10 diagnosis of schizophrenia or related disorder	N = 66 (49 males) Mean age = 23.3 years SD = (4.6)	PBIQ-R (Birchwood *et al.*, 2012)	Calgary Depression Scale for Schizophrenia (CDSS; Addington *et al.*, 1993)
Hutton, Di Rienzo, Turkington, Spencer, & Taylor (2019) United Kingdom	Cross-sectional, within and longitudinal	ICD-10 diagnosis of schizophrenia or related disorder, no antipsychotic medication for past 6 months	N = 68 (37 male) Mean age = 31.0 years SD = 12.75	PBEQ (Pyle, Stewart, *et al.*, 2015)	Becks Depression Inventory for Primary Care (BDI-PC; Beck, *et al.*, 1997)
Iqbal *et al.* (2000) United Kingdom	Cross-sectional, between and longitudinal	ICD-10 criteria for schizophrenia or a related disorder	N = 59	PBIQ (Birchwood *et al.*, 1993)	Becks Depression Inventory (BDI; Beck & Steer, 1993)
Karatzias *et al.* (2007) United Kingdom	Cross-sectional, between	DSM-IV schizophrenia spectrum disorder	N = 138 (99 males) Mean age = 36.5 years SD = (9.7)	PBIQ (Birchwood *et al.*, 1993)	DSM-IV Criteria for Anxiety and Affective Disorders (American Psychiatric Association, 2000)

Table 2. (*Continued*)

Author(s) (year) Country	Design	Sample	Sample characteristics	Beliefs measure	Distress measure
Michail and Birchwood (2013) United Kingdom[*]	Cross-sectional, between	First-episode psychosis- ICD-10 diagnosis of schizophrenia or related disorder	N = 80 (53 males) Anxious group: Mean age = 24.4 years SD = (5.1) Non-anxious group: Mean age = 24.6 years SD = (4.5)	PBIQ (Birchwood et al., 1993)	ICD-10 Social Anxiety Diagnosis based on SCAN (WHO, 1993)
Noyman-Veksler et al. (2013) Israel	Cross-sectional, within and longitudinal	ICD-10 schizophrenia spectrum disorder	N = 98 (59 males) Mean age = 42.43 years SD = (11.02)	PBIQ – 'Self as Illness' subscale only (Birchwood et al., 1993)	Calgary Depression Scale for Schizophrenia (CDSS; Addington et al., 1993)
Pyle, Stewart, et al. (2015) United Kingdom	Cross-sectional, within and longitudinal	At-risk mental state	N = 288 (180 males) Mean age = 20.74 years SD = (4.34)	PBEQ (Pyle, Stewart, et al., 2015)	The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) Becks Depression Inventory for Primary Care (BDI-PC; Beck, et al., 1997). Comprehensive Assessment of At Risk Mental State (CAARMS; Yung et al., 2005)
Pyle, Brabban, et al. (2015) United Kingdom	Cross-sectional, within and longitudinal	ICD-10 schizophrenia spectrum or meeting criteria for early intervention service	N = 66 (36 males) Mean age = 31.36 years SD = (12.4)	PBEQ (Pyle, Stewart, et al., 2015)	The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998)
Rooke and Birchwood (1998) United Kingdom	Longitudinal	Schizophrenia	N = 47 (38 males) Mean age = 42.1 years SD = (12.7)	PBIQ (Birchwood et al., 1993)	Beck Depression Inventory (BDI; Beck & Steer, 1993)
Shahar et al. (2010) Not specified	Cross-sectional, within	Schizophrenia spectrum disorder and substance use disorder	N = 55 (35 males) Mean age = 37.74 years SD = (10.58)	PBIQ- 'Self as Illness' subscale only (Birchwood et al., 1993)	The Centre for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977)

Table 2. (*Continued*)

Author(s) (year) Country	Design	Sample	Sample characteristics	Beliefs measure	Distress measure
Stip, Caron, Tousignant, & Lecomte, (2017) Canada	Cross-sectional, within and longitudinal	DSM-IV-TR Schizophrenia spectrum disorder	N = 45 (22 males) Mean age = 32.3 years SD = 9.62	PBIQ-R (Birchwood et al., 2012)	Beck Scale for Suicidal Ideation (BSS; Beck, Kovacs & Weissman, 1979)
Stowkowy, Perkins, Woods, Nyman, & Addington (2015) Canada and USA	Cross-sectional, within	Clinical high risk (CHR)	N = 153 (88 males) Mean age = 19.82 years SD = (4.48)	PBEQ (Pyle, Stewart, et al., 2015)	Calgary Depression Scale for Schizophrenia (CDSS; Addington et al., 1993)
Taylor, Pyle, et al. (2015) study 1 United Kingdom	Cross-sectional, within	DSM-IV bipolar disorder	N = 202 (98 males) Mean age = 36.56 years SD = (10.6)	PBIQ (Birchwood et al., 1993)	Beck Depression Inventory (BDI-II; Beck et al., 1996)
Taylor, Pyle, et al. (2015) study 2 United Kingdom	Cross-sectional, within	*Sample 1* – ICD-10 schizophrenia spectrum disorders. *Sample 2* – at-risk mental state (ARMS)	N = 362 (219 males) Mean age = 22.96 years SD = (7.99)	PBEQ (Pyle, Stewart, et al., 2015)	Becks Depression Inventory for Primary Care (BDI-PC; Beck, et al., 1997)
Upthegrove et al. (2014) United Kingdom	Cross-sectional, between and longitudinal	First-episode psychosis- ICD-10 category of psychotic illness:	N = 92 (69 males) Mean age = 22.5 years SD = (4.89)	PBIQ-R (Birchwood et al., 2012)	Calgary Depression Scale for Schizophrenia (CDSS; Addington et al., 1993)
White et al. (2007) United Kingdom	Cross-sectional, within	DSM-IV schizophrenia	N = 100 (78 males) Mean age = 39.4 years SD = (11.2)	PBIQ (Birchwood et al., 1993)	Calgary Depression Scale for Schizophrenia (CDSS; Addington et al., 1993)

Notes. ICD-10 = International Classification of Diseases-10; DSM-IV = Diagnostic and Statistical Manual of Mental Diseases. CHR and ARMS both capture the same sample; individuals in the prodromal phase of psychosis.

Table 3. Risk of bias assessment

	Unbiased selection of the cohort?	Sample size calculated	Adequate description of the cohort?	Validated method for ascertaining clinical status or participant group	Validated methods for assessing predictor or risk variables	Validated methods for assessing outcome or criterion variable	Outcome assessments blind to diagnostic/ clinical/ participant status	Missing data are minimal	Analysis controls for confounding	Analytic methods appropriate	Adequate follow-up period
Acosta et al. (2013)*	No	No	Yes	U	P	Yes	No	U	No	Yes	N/A
Birchwood et al. (1993)*	Yes	No	Yes	P	P	No	U	U	No	Yes	N/A
Birchwood et al. (2005)*	Yes	U	U	Yes	P	Yes	U	U	U	Yes	N/A
Birchwood et al. (2007)*	U	No	Yes	No	P	Yes	No	U	No	Yes	N/A
Birchwood et al. (2012)*	Yes	No	Yes	No	Yes	No	No	U	No	Yes	Yes
Hutton et al. (2019)*	No	No	P	U	Yes	No	No	No	Yes	Yes	Yes
Iqbal et al. (2000)*	Yes	No	No	U	P	Yes	No	U	No	Yes	Yes
Karatzias et al. (2007)*	Yes	No	P	Yes	P	Yes	No	U	No	Yes	N/A
Michail and Birchwood (2013)*	U	No	Yes	Yes	P	Yes	U	U	No	Yes	N/A
Noyman-Veksler et al. (2013)*	U	No	P	U	P	Yes	No	No	No	Yes	No
Pyle, Brabban, et al. (2015)*	No	No	Yes	Yes	Yes	P	No	U	No	Yes	P
Pyle, Stewart, et al. (2015)*	No	No	Yes	Yes	Yes	No	No	U	Yes	Yes	P
Rooke and Birchwood (1998)	Yes	No	P	P	P	Yes	No	Yes	No	Yes	Yes
Shahar et al. (2010)*	U	No	P	U	P	Yes	No	U	No	Yes	N/A
Stip et al. (2017)	No	No	Yes	No	Yes	Yes	N/A	No	No	Yes	Yes
Stowkowy et al. (2015)*	U	No	Yes	Yes	Yes	Yes	No	U	No	Yes	N/A
Taylor, Pyle, et al. (2015) study 1*	U	No	P	Yes	Yes	Yes	U	Yes	No	Yes	N/A
Taylor, Pyle, et al. (2015) study 2*	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	N/A
Upthegrove et al. (2014)*	Yes	No	Yes	Yes	Yes	Yes	P	Yes	No	Yes	Yes
White et al. (2007)*	U	No	Yes	Yes	P	Yes	No	U	No	Yes	N/A

Notes. N/A = not applicable; P = partial; U = unsure.
*included in the meta-analysis.

Bivariate association between beliefs about SMHD and emotional distress

Meta-analyses of the bivariate association between beliefs about SMHD and depression, anxiety, or suicidal ideation were conducted separately for each cluster of subscales. The results of these meta-analyses are reported in Tables 4–6. Inconsistency was greater for analyses where the outcome was anxiety compared with depression. The higher inconsistency for anxiety suggests other factors likely moderate the associations. However, the small number of studies contributing to any one meta-analysis precludes the testing of such moderator effects (Borenstein *et al.*, 2009). The number of studies included in each meta-analysis ranged from 2 to 11. Overall, the quality of meta-analysis estimates was mostly moderate where the outcome was depression, largely down-rated due to an increased risk of bias (lack of blinding of assessment and sample size justification). The quality of estimate where anxiety and suicidal ideations were the outcomes of interest was poorer. This was in part due to fewer studies, resulting in wider confidence intervals and also increased heterogeneity. Further studies with large samples, clear sample size justification and blinding of assessments, would help lead to higher-quality meta-analysis estimates. Where the outcome was depression, the pooled effect size for the association across the subscales ranged from $r = .31$ to $.56$. The 'negative appraisals of experiences' had the strongest effect size ($k = 2$, $N = 482$, $r = .56$, 95% CI 0.54, 0.72; low quality), but this was based upon only two studies and so results are preliminary (as they may rely too much on individual studies). The findings for 'control over illness' ($k = 9$, $N = 732$, $r = .47$, 95% CI 0.44, 0.58; moderate quality) were more robust as this meta-analysis contained more studies ($k = 9$). For anxiety, associations ranged from $r = .24$ to $.38$ with 'control over illness' having the strongest association with anxiety ($k = 3$, $N = 281$, $r = .38$, 95% CI 0.28, 0.52; low quality) and subscales relating to social marginalization/humiliation having the weakest correlation. Finally, associations between negative appraisal of experiences and suicidal ideation ($k = 2$, $N = 356$, $r = .35$, 95% CI 0.26, 0.47; very low quality) were also found to be significant.

Longitudinal studies

A total of nine studies examined whether beliefs were prospectively associated with outcomes. Overall, there was some suggestion of an association between beliefs about SMHD and distress experience; however, this association is only evident for depression. One study found changes in depression scores over 6 months correlated with changes in all PBIQ-R subscales (Birchwood *et al.*, 2012). Others highlight the role of specific beliefs in predicting distress. Noyman-Veksler *et al.* (2013) report a significant association between 'self as illness' and depression at 6 weeks of follow-up, whilst Rooke and Birchwood (1998) found 'entrapment' at baseline to be predictive of depression at a 30-month follow-up. Iqbal, Birchwood, Chadwick, and Trower (2000) found that entrapment, social humiliation, loss, and self as illness were significantly more negative in individuals who later went on to develop post-psychotic depression compared with those who did not (12-month follow-up). Similarly, Upthegrove and colleagues (Upthegrove, Ross, Brunet, McCollum & Jones, 2014) reported that perceived loss (OR = 1.38; 95% CI: 1.11, 1.74), though not beliefs about shame or control, was associated with a greater risk of post-psychotic depression 12 months later, adjusting for prodromal and acute-phase depression, current psychotic symptoms, perceived need for treatment, and duration of untreated psychosis. Utilizing the PBEQ, Pyle, Brabban, *et al.* (2015) and Pyle, Stewart, *et al.* (2015) found that baseline scores on the 'negative appraisals of experience' and 'expectations' subscales were predictive of depression at 3- and 6-month follow-up,

Table 4. Results of the meta-analysis when outcome was depression

Subscales	Number of studies/participants (K/N)	r (95% CI)	I^2	Risk of bias	Overall quality
Self as illness[a]	9/1,114	.35* (0.31, 0.42)	68%	Down-rated due to blinding and sample size justification	Moderate
Control over illness	9/732	.47* (0.44, 0.58)	55%	Down-rated due to blinding and sample size justification	Moderate
Stigma	11/1,214	.36* (0.32, 0.43)	0%	Down-rated due to blinding and sample size justification	Moderate
Social containment	7/646	.31* (0.24, 0.40)	47%	Down-rated due to blinding and sample size justification	Moderate
Expectations	8/579	.44* (0.39, 0.55)	51%	Down-rated due to blinding and sample size justification	Moderate
Entrapment (PBIQ-R)	2/158	.54* (0.45, 0.76)	31%	Down-rated due to clinical status identification, blinding, and sample size justification	Very low
Negative appraisal of experiences	2/482	.56* (0.54, 0.72)	72%	Down-rated due to sample selection, blinding, and sample size justification	Low

Notes. When we removed studies that included an ARMS sample, the results of the meta-analyses were as follows: self as illness ($r = .32$, 95% CI 0.26, 0.41); control over illness ($r = .48$, 95% CI 0.44, 0.60); stigma ($r = .36$, 95% CI 0.31, 0.45); and social containment ($r = .30$, 95% CI 0.22, 0.40). Finally, a meta-analysis for negative appraisals of experiences could not be ran as there was only one study using this subscale.
[a]We struggled to determine the sample size for one study (Noyman-Veksler *et al.*, 2013), and as such, the smallest possible value was selected; *$p < .05$.

Table 5. Results of the meta-analysis when outcome was anxiety

Subscales	Number of studies/ participants (K/N)	r (95% CI)	I^2	Risk of bias	Overall quality
Self as illness	2/186	.35* (0.22, 0.51)	82%	Down-rated due to sample selection, blinding, and sample size justification	Very low
Control over illness[a]	3/281	.38* (0.28, 0.52)	0%	Down-rated due to blinding and sample size justification	Low
Stigma	4/345	.36* (0.27, 0.48)	46%	Down-rated due to blinding and sample size justification	Low
Social containment	3/281	.24 (0.13, 0.36)	84%	Down-rated due to blinding and sample size justification	Very low
Expectations	3/266	.31* (0.20, 0.44)	36%	Down-rated due to blinding and sample size justification	Low

Notes. [a]This represent the effect size when scores from two subscales (control and entrapment) were aggregated. When the meta-analysis was run with the control subscale only (r = .36, 95% CI 0.31, 0.54), entrapment only (r = .40, 95% CI 0.26, 0.49); *p < .05.

Table 6. Results of the meta-analysis when the outcome was suicidal ideation

Subscale	Number of studies/ participants (K/N)	r (95% CI)	I^2	Risk of bias	Overall quality
Negative appraisal of experiences	2/356	.35[*] (0.26, 0.47)	85%	Down-rated due to sample selection, blinding, and sample size justification	Very low

Notes. Two correlation coefficient values were reported for the association between negative appraisal of experience and suicidal ideation in the paper by the Pyle, Stewart, *et al.* (2015), and the smaller correlation coefficient was selected; *$p < .05$.

respectively. Three studies investigated the association between negative beliefs and suicidal ideation or risk over periods between 6 and 18 months, but no significant relationships were reported (Hutton *et al.*, 2019; Pyle, Stewart, *et al.*, 2015; Stip, *et al.*, 2017). However, small samples in two of these studies likely limited power ($n = 45$–68). Overall, studies seemed to suggest that appraisals of entrapment, loss, and attributing illness to self are associated with depression scores longitudinally.

Adjusting for psychosis symptoms
A small number of studies controlled for psychosis symptoms (Birchwood *et al.*, 2007; Hutton *et al.*, 2019; Karatzias, Gumley, Power, & O'Grady, 2007; Rooke & Birchwood, 1998; Shahar, Weinberg, McGlashan, & Davidson, 2010; Upthegrove *et al.*, 2014). These publications reported that when controlling for psychosis symptoms, cognitive appraisals (e.g., entrapment, loss) remained significantly associated with depression, anxiety, and (in one study; cross-sectional association in Hutton et al., 2019) suicidal ideation, whilst psychosis symptoms (e.g., positive symptoms) were not found to significantly predict emotional distress.

Studies involving ARMS and bipolar populations
Three studies examined appraisals held by those at risk of developing psychosis. Consistent with the overall pattern of results, these studies revealed that appraisals of experience are significantly associated with depression and anxiety (Pyle, Stewart, *et al.*, 2015; Stowkowy, *et al*, 2015; Taylor, Pyle, *et al*., 2015). Similarly, studies involving bipolar population revealed that negative beliefs about bipolar were associated with depressive symptoms (Birchwood *et al.*, 1993; Taylor, Pyle, *et al*., 2015).

Discussion
The aim of this meta-analysis was to investigate whether negative beliefs about SMHD were associated with emotional distress (specifically depression, anxiety, and self-harm), and if so, to determine the direction and strength of this relationship. A total of 19 eligible papers were identified, with 17 contributing to meta-analyses. The resulting meta-

analyses suggest that negative appraisals of SMHD (e.g., less perceived control over experiences or perceiving psychosis as stigmatizing or resulting in loss) are associated with greater depression, anxiety, and suicidal ideation. These findings are in line with the emotional dysregulation hypothesis put forward by Birchwood *et al*. (2005). Research suggests that a perceived loss of social rank, entrapment, and shame may be important in the development of depression (Gilbert & Allan, 1998; Griffiths, Wood, Maltby, Taylor, & Tai, 2014; Sloman, Gilbert, & Hasey, 2003). However, the role of such perceptions in the development of anxiety is less well-defined. This is mirrored in the current meta-analysis, as associations between negative beliefs and depression were stronger than those between beliefs and anxiety. Very low-quality evidence suggests that negative beliefs were associated with current suicidal thinking, but this was based on only two studies, and no prospective association between negative beliefs and suicidal ideation was significant.

The results of the review are consistent with cognitive models of distress (e.g., Becks cognitive theory; Beck, 2008) which argue that our appraisals of events are important in shaping our emotional responses to them. A perceived lack of control over experiences had the strongest associations with depression and anxiety. Similar results have been reported for an external locus of control, whereby viewing events as controlled by external forces is associated with problems such as suicidal ideation in individuals with psychosis (Chang *et al.*, 2014). Seeing the challenges posed by psychosis as outside of one's control may engender feelings of helplessness and hopelessness, which may increase the risk of depression and anxiety (Birchwood, Iqbal, Chadwick & Trower, 2000; Chang *et al.*, 2014). Beliefs about SMHD (e.g., psychosis) that pose a threat to one's social status and standing (including beliefs that experiences are a social judgement on oneself or indicative of internal failings and defectiveness) may also be problematic due to an evolved sensitivity to social rank, in line with predictions from the social rank theory (Gilbert, 2000).

The results of the review are consistent with a wider body of research those obtained using measures derived from the SRM (Leventhal *et al.*, 1984) to capture illness representations in a number of populations (e.g., psychosis and eating disorders). These studies have found that having a strong illness identity, reporting poor coherent understanding, perceiving difficulties as chronic, and viewing experience as having many negative consequences are associated with greater anxiety and depression in those experiencing psychosis (Lobban *et al.*, 2004; 2005; Watson *et al.*, 2006), with perceptions of chronicity being linked to greater levels of distress amongst those experiencing an eating disorder (see Baines & Wittkowski, 2013, for a review). The results in this review also mirror those in the physical health literature, whereby the way individuals perceive their physical health difficulties is associated with physical and mental health outcomes (e.g., Broadbent *et al.*, 2015).

It is important to note that whilst negative appraisals may contribute to emotional distress, it is also very possible that pre-existing depression and anxiety could result in more negative appraisals of mental health difficulty, for example, by making an individual's difficulties seem more pronounced. Depression and anxiety are common in the prodromal period prior to episodes of psychosis (Fusar-Poli, Nelson, Valmaggia, Yung, & McGuire, 2012; McGorry, Hartmann, Spooner, & Nelson, 2018). It is therefore plausible that pre-existing depression and anxiety may also contribute to negative beliefs about a given SMHD. However, there was evidence that even when adjusting for prodromal depressive symptoms, certain beliefs remained associated with the risk of later post-psychotic depression (e.g., loss; Upthegrove *et al.*, 2014).

The review included studies with individuals diagnosed with bipolar disorder, or in the ARMS population, as well as those diagnosed with schizophrenia spectrum disorders. It is possible that there are important differences between these groups in terms of the beliefs they hold about their difficulties. For example, the lack of formal diagnosis in the ARMS population may result in different experiences (although qualitative research suggests similar concerns exist between those in the ARMS population and those diagnosed with schizophrenia spectrum disorders; Byrne & Morrison, 2010; Wagner & King, 2005). The very small number of studies including bipolar disorder samples ($k = 2$) or ARMS samples ($k = 3$, with $k = 2$ eligible for inclusion in the meta-analysis) precluded any direct statistical comparison of results. Within these samples, there was evidence consistent with the wider results, with negative beliefs being positively correlated with emotional distress. Future research focussed on the development and impact of negative beliefs about experiences in these under-studied populations would be beneficial.

One of the main limitations of the studies included in this review was the use of cross-sectional design. Such a design can present difficulties in ascertaining causality, the direction, or the temporal qualities of the relationship identified. However, longitudinal studies do appear to suggest that beliefs about psychosis, for example, predict the onset of post-psychotic depression (Iqbal *et al.*, 2000). Whilst longitudinal research design cannot prove causality, it does help increase the plausibility of a causal effect. The hypothesis that negative beliefs lead to distress is further supported by evidence that the association between these variables cannot be explained by psychotic symptom severity. This suggests that the association between negative beliefs and emotional distress is not confounded by symptom severity. This review has established that there is a relatively consistent cross-sectional association between beliefs about SMHD and emotional distress; however, longitudinal designs or interventionist-causal randomized control trials, which can better aid the identification of causal effects, are needed to further understand this relationship.

Given the well-documented overlap between depression and anxiety (McLaughlin & Nolen-Hoeksema, 2011), a failure to account for the relative impact of depression upon the association between beliefs and anxiety and vice versa may have biased effect sizes. Additionally, the small number of studies and the lack of large-scale studies meant that a formal examination of moderator effects and publication bias could not be carried out. We recognize that whilst these meta-analyses revealed a potential association between beliefs and distress, such findings should be treated with caution due to the small number of studies included.

Other measures, such as the Illness Perception Questionnaire for Schizophrenia (Lobban *et al.*, 2005), have been utilized to capture beliefs about SMHD; however, there are a number of issues associated with using measures derived from models of physical health (see Kinderman *et al.*, 2006 for a discussion). Therefore, in this analysis we only included the PBIQ, PBIQ-R, and the PBEQ, as these three measures were developed specifically to address beliefs about psychosis (including ARMS) and bipolar disorder and choosing to focus on only three measures allowed us to reduce heterogeneity. There are, however, a number of issues associated with the measures we selected to include in this meta-analysis. Whilst there is evidence of the reliability and validity of the PBIQ-R and PBEQ, this was not the case for the earlier version (PBIQ). In addition, whilst being brief measures may have clinical benefits, the small number of items included, especially in the PBEQ, could present issues with content validity (Taylor, Pyle, *et al.*, 2015). We acknowledge that there are wider definitions of psychological distress and tools to

measure this. Therefore, different findings might have emerged if a broader definition of distress was used.

The focus of evaluations of therapies for psychosis has tended to be on psychotic symptoms; however, we argue that focusing on the associated emotional distress (e.g., depression) is important. The current review revealed that a number of subscales (beliefs) held moderately strong associations with depression, anxiety, and suicidal ideation. Interventions targeting these specific beliefs (e.g., internal and external shame) may be important in enhancing current treatments focused on targeting emotional distress in psychosis. Cognitive-behavioural therapy (CBT) is the recommended treatment for psychosis and bipolar in the United Kingdom (National Institute for Health & Care Excellence, 2014). Evidence suggests that CBT is effective in targeting depression in psychosis and bipolar (Salcedo *et al.*, 2016; Singer, Addington, Dobson, & Wright, 2014). Furthermore, CBT has been found to be effective in modifying negative beliefs about psychosis (e.g., loss; Gumley *et al.*, 2006; Singer, *et al.*, 2014). Consistent with current research, a tailored CBT approach to treatment may be helpful. This would begin with an assessment of an individual's beliefs about their experiences of their mental health difficulty, followed by interventions designed to modify the beliefs hypothesized to underlie the individual's distress. For example, psychoeducation and sharing of stories of recovery may help modify beliefs about future expectations, whilst behavioural experiments and verbal reattribution techniques might be useful for challenging beliefs about the degree of control a client has over their difficulties. This type of work may also be important as research has suggested that beliefs about SMHD (e.g., psychosis) including fear of relapse may be an important factor increasing the risk of relapse in the future (Gumley *et al.*, 2015). As such, therapeutic work around the beliefs individuals hold about their mental health difficulties may also be an important part of relapse prevention planning. Further research into whether therapeutic work with beliefs about SMHD could help reduce the risk of relapse is needed.

Finally, the messages and narratives implicit within the treatment culture an individual is exposed to may also have a role in affecting the beliefs they develop (e.g., the message that difficulties will be chronic and enduring). Therefore, a recovery-focused treatment framework that encourages more positive narratives around individuals' difficulties (e.g., that recovery is possible) may be helpful (Leamy, Bird, Le Boutillier, Williams, & Slade, 2011). Overall, results suggest that services that encourage a more positive outlook on SMHD might be helpful where they modify beliefs individuals hold. Our findings also highlight a potential need for services to promote control over such experiences and adopt a recovery-focused approach.

Conflicts of interest
All authors declare no conflict of interest.

Author contributions

Data availability statement

Data sharing is not applicable to this article as no new data were created or analysed in this study.

References

Achim, A. M., Maziade, M., Raymond, É., Olivier, D., Mérette, C., & Roy, M. A. (2011). How prevalent are anxiety disorders in schizophrenia? A meta-analysis and critical review on a significant association. *Schizophrenia Bulletin*, *37*, 811–821. https://doi.org/10.1093/schbul/sbp148

Acosta, F. J., Aguilar, E. J., Cejas, M. R., & Gracia, R. (2013). Beliefs about illness and their relationship with hopelessness, depression, insight and suicide attempts in schizophrenia. *Psychiatria Danubina*, *25*(1), 49–54.

Addington, D., Addington, J., & Maticka, T. E. (1993). Assessing depression in schizophrenia: The Calgary Depression Scale. *The British Journal of Psychiatry*, *163*, 39–44. https://doi.org/10.1192/S0007125000292581

Aguinaga-Ontoso, I., Brugos-Larumbe, A., & Guillén-Aguinaga, S. (2019). Comorbidity associated with Severe Mental illness (The APNA study) Ines Aguinaga-Ontoso. *European Journal of Public Health*, *29*(Suppl. 4), 187–195. https://doi.org/10.1093/eurpub/ckz187.195

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Baines, T., & Wittkowski, A. (2013). A systematic review of the literature exploring illness perceptions in mental health utilising the self-regulation model. *Journal of Clinical Psychology in Medical Settings*, *20*, 263–274. https://doi.org/10.1007/s10880-012-9337-9

Beck, A. T. (2008). The evolution of the cognitive model of depression and its neurobiological correlates. *American Journal of Psychiatry*, *165*, 969–977. https://doi.org/10.1176/appi.ajp.2008.08050721

Beck, A. T., Guth, D., Steer, R. A., & Ball, R. (1997). Screening for major depression disorders in medical inpatients with the Beck Depression Inventory for Primary Care. *Behaviour Research & Therapy*, *35*, 785–791. https://doi.org/10.1016/S0005-7967(97)00025-9

Beck, A. T., Kovacs, M., & Weissman, M. (1979). Assessment of suicidal intention: The scale for suicidal ideation. *Journal of Consulting & Clinical Psychology*, *47*, 343–352. https://doi.org/10.1037/0022-006X.47.2.343

Beck, A. T., & Steer, R. A. (1993). *Manual for the Beck Depression Inventory-I*. San Antonio, TX: Psychological Corporation.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation.

Birchwood, M., Iqbal, Z., Chadwick, P., & Trower, P. (2000). Cognitive approaches to depression and suicidal thinking in psychosis. *British Journal of Psychiatry*, *177*, 516–521. https://doi.org/10.1192/bjp.177.6.516

Birchwood, M., Iqbal, Z., & Upthegrove, R. (2005). Psychological pathways to depression in schizophrenia: Studies in acute psychosis, post psychotic depression and auditory hallucinations. *European Archives of Psychiatry and Clinical Neuroscience*, *255*, 202–212. https://doi.org/10.1007/s00406-005-0588-4

Birchwood, M., Jackson, C., Brunet, K., Holden, J., & Barton, K. (2012). Personal beliefs about illness questionnaire-revised (PBIQ-R): Reliability and validation in a first episode sample. *British Journal of Clinical Psychology*, *51*, 448–458. https://doi.org/10.1111/j.2044-8260.2012.02040.x

Birchwood, M., Mason, R., MacMillan, F., & Healy, J. (1993). Depression, demoralization and control over psychotic illness: A comparison of depressed and non-depressed patients with a chronic psychosis. *Psychological Medicine*, *23*, 387–395. https://doi.org/10.1017/S0033291700028488

Birchwood, M., Trower, P., Brunet, K., Gilbert, P., Iqbal, Z., & Jackson, C. (2007). Social anxiety and the shame of psychosis: A study in first episode psychosis. *Behaviour Research and Therapy*, *45*, 1025–1037. https://doi.org/10.1016/j.brat.2006.07.011

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis*. West Sussex, UK: Wiley & Sons.

Broadbent, E., Wilkes, C., Koschwanez, H., Weinman, J., Norton, S., & Petrie, K. J. (2015). A systematic review and meta-analysis of the brief illness perceptions questionnaire. *Psychology & Health*, *30*, 1361–1385. https://doi.org/10.1080/08870446.2015.1070851

Buckley, P. F., Miller, B. J., Lehrer, D. S., & Castle, D. J. (2009). Psychiatric comorbidities and schizophrenia. *Schizophrenia Bulletin*, *35*, 383–402. https://doi.org/10.1093/schbul/sbn135

Byrne, R., & Morrison, A. P. (2010). Young people at risk of psychosis: A user-led exploration of interpersonal relationships and communication of psychological difficulties. *Early Intervention in Psychiatry*, *4*, 162–168. https://doi.org/10.1111/j.1751-7893.2010.00171.x

Challis, S., Nielssen, O., Harris, A., & Large, M. (2013). Systematic meta-analysis of the risk factors for deliberate self-harm before and after treatment for first-episode psychosis. *Acta Psychiatrica Scandinavica*, *127*, 442–454. https://doi.org/10.1111/acps.12074

Chang, H. C., Huang, K. C., Chiu, W. C., Tang, C. H., & Su, K. P. (2016). Change in employment status in bipolar disorder: A longitudinal study using national claims data. *The Journal of Clinical Psychiatry*, *77*, e429–e435. https://doi.org/10.4088/jcp.14m09576

Chang, W. C., Chen, E. S. M., Hui, C. L. M., Chan, S. K. W., Lee, E. H. M., & Chen, E. Y. H. (2014). The relationships of suicidal ideation with symptoms, neurocognitive function, and psychological factors in patients with first-episode psychosis. *Schizophrenia Research*, *157*, 12–18. https://doi.org/10.1016/j.schres.2014.06.009

DerSimonian, R., & Laird, N. (1986). Meta-analysis in clinical trials. *Controlled Clinical Trials*, *7*, 177–188. https://doi.org/10.1016/0197-2456(86)90046-2

Estroff, S. E. (1989). Self, identity and subjective experiences of schizophrenia: In search of the subject. *Schizophrenia Bulletin*, *15*, 189–196.

Fusar-Poli, P., Nelson, B., Valmaggia, L., Yung, A. R., & McGuire, P. K. (2012). Comorbid depressive and anxiety disorders in 509 individuals with an at-risk mental state: Impact on psychopathology and transition to psychosis. *Schizophrenia Bulletin*, *40*(1), 120–131. https://doi.org/10.1093/schbul/sbs136

Gilbert, P. (2000). The relationship of shame, social anxiety and depression: The role of the evaluation of social rank. *Clinical Psychology & Psychotherapy*, *189*, 174–189. https://doi.org/10.1002/1099-0879(200007)7:3<174:AID-CPP236>3.0.CO;2-U

Gilbert, P., & Allan, S. (1998). The role of defeat and entrapment (arrested flight) in depression: An exploration of an evolutionary view. *Psychological Medicine*, *28*, 585–598. https://doi.org/10.1017/S0033291798006710

Granek, L., Danan, D., Bersudsky, Y., & Osher, Y. (2016). Living with bipolar disorder: The impact on patients, spouses, and their marital relationship. *Bipolar Disorders*, *18*, 192–199. https://doi.org/10.1111/bdi.12370

Griffiths, A. W., Wood, A. M., Maltby, J., Taylor, P. J., & Tai, S. (2014). The prospective role of defeat and entrapment in depression and anxiety: A 12-month longitudinal study. *Psychiatry Research*, *216*(1), 52–59. https://doi.org/10.1016/j.psychres.2014.01.037

Grupe, D., & Nitschke, J. (2013). Uncertainty and anticipation in anxiety: An integrated neurobiological and psychological perspective. *Nature Reviews Neuroscience*, *14*, 488–501. https://doi.org/10.1038/nrn3524.Uncertainty

Gumley, A., Karatzias, A., Power, K., Reilly, J., McNay, L., & O'Grady, M. (2006). Early intervention for relapse in schizophrenia: Impact of cognitive behavioural therapy on negative beliefs about psychosis and self-esteem. *The British Journal of Clinical Psychology*, *45*, 247–260. https://doi.org/10.1348/014466505X49925

Gumley, A. I., MacBeth, A., Reilly, J. D., O'Grady, M., White, R. G., McLeod, H., . . . Power, K. G. (2015). Fear of recurrence: Results of a randomized trial of relapse detection in schizophrenia. *British Journal of Clinical Psychology*, *54*(1), 49–62. https://doi.org/10.1111/bjc.12060

Guyatt, G., Oxman, A. D., Akl, E. A., Kunz, R., Vist, G., Brozek, J., . . . Jaeschke, R. (2011). GRADE guidelines: 1. Introduction—GRADE evidence profiles and summary of findings tables. *Journal of clinical epidemiology*, *64*(4), 383–394. https://doi.org/10.1016/j.jclinepi.2010.04.026

Guyatt, G. H., Oxman, A. D., Vist, G. E., Kunz, R., Falck-Ytter, Y., Alonso-Coello, P., & Schünemann, H. J. (2008). GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ*, *336*(7650), 924–926. https://doi.org/10.1136/bmj.39489.470347.AD

Hagger, M. S., & Orbell, S. (2003). A meta-analytic review of the common-sense model of illness representations. *Psychology and Health*, *18*, 141–184. https://doi.org/10.1080/088704403100081321

Hartley, S., Barrowclough, C., & Haddock, G. (2013). Anxiety and depression in psychosis: A systematic review of associations with positive psychotic symptoms. *Acta Psychiatrica Scandinavica*, *128*, 327–346. https://doi.org/10.1111/acps.12080

Heald, A., Morris, J., & Soni, S. D. (2008). Characterisation of depression in patients with schizophrenia. *Indian Journal of Medical Research*, *127*, 544–550.

Higgins, J. P. T., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *British Medical Journal*, *327*, 557–560. https://doi.org/10.1136/bmj.327.7414.557

Hutton, P., Di Rienzo, F., Turkington, D., Spencer, H., & Taylor, P. (2019). Suicidal ideation in people with psychosis not taking antipsychotic medication: Do negative appraisals and negative metacognitive beliefs mediate the effect of symptoms? *Schizophrenia Bulletin*, *45*(1), 37–47. https://doi.org/10.1093/schbul/sby153

Ibrahim, J. G., Chu, H., & Chen, M. (2012). Missing data in clinical studies: Issues and methods. *Journal in Clinical Oncology*, *30*, 3297–3303. https://doi.org/10.1200/JCO.2011.38.7589

Iqbal, Z., Birchwood, M., Chadwick, P., & Trower, P. (2000). Cognitive approach to depression and suicidal thinking in psychosis. 2. Testing the validity of a social ranking model. *The British Journal of Psychiatry*, *177*, 522–528. https://doi.org/10.1192/bjp.177.6.522

Jones, S., Riste, L., Barrowclough, C., Bartlett, P., Clements, C., Davies, L., . . . Morriss, R. (2018). Reducing relapse and suicide in bipolar disorder: Practical clinical approaches to identifying risk, reducing harm and engaging service users in planning and delivery of care–the PARADES (Psychoeducation, Anxiety, Relapse, Advance Directive Evaluation and Suicidality) programme. *Programme Grants Applied Research*, *6*(6), 1–296. https://doi.org/10.3310/pgfar06060

Karatzias, T., Gumley, A., Power, K., & O'Grady, M. (2007). Illness appraisals and self-esteem as correlates of anxiety and affective comorbid disorders in schizophrenia. *Comprehensive Psychiatry*, *48*, 371–375. https://doi.org/10.1016/j.comppsych.2007.02.005

Kinderman, P., Setzu, E., Lobban, F., & Salmon, P. (2006). Illness beliefs in schizophrenia. *Social Science & Medicine*, *63*, 1900–1911. https://doi.org/10.1016/j.socscimed.2006.04.022

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

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

Lobban, F., Barrowclough, C., & Jones, S. (2004). The impact of beliefs about mental health problems and coping on outcome in schizophrenia. *Psychological Medicine*, *34*, 1165–1176. https://doi.org/10.1017/S003329170400203X

Lobban, F., Barrowclough, C., & Jones, S. (2005). Assessing cognitive representations of mental health problems. The illness perception questionnaire for schizophrenia. *British Journal of Clinical Psychology*, *44*, 147–162. https://doi.org/10.1348/014466504X19497

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, *36*, 455–470. https://doi.org/10.1016/S0005-7967(97)10031-6

McGorry, P. D., Hartmann, J. A., Spooner, R., & Nelson, B. (2018). Beyond the "at risk mental state" concept: Transitioning to transdiagnostic psychiatry. *World Psychiatry*, *17*, 133–142. https://doi.org/10.1002/wps.20514

McLaughlin, K. A., & Nolen-Hoeksema, S. (2011). Rumination as a transdiagnostic factor in depression and anxiety. *Behaviour Research and Therapy*, *49*, 186–193. https://doi.org/10.1016/J.BRAT.2010.12.006

Michail, M., & Birchwood, M. (2013). Social anxiety disorder and shame cognitions in psychosis. *Psychological Medicine*, *43*(1), 133–142. https://doi.org/10.1017/S0033291712001146

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, *6*, e1000097. https://doi.org/10.1371/journal.pmed1000097

Mork, E., Walby, F. A., Harkavy-friedman, J. M., Barrett, E. A., Steen, N. E., Lorentzen, S., . . . Mehlum, L. (2013). Clinical characteristics in schizophrenia patients with or without suicide attempts and non-suicidal self-harm: A cross-sectional study. *BMC Psychiatry*, *13*(1), 255–262. https://doi.org/10.1186/1471-244X-13-255

National Institute for Health and Care Excellence (2014). *Psychosis and schizophrenia in adults: Prevention and management*. Retrieved from https://www.nice.org.uk/guidance/cg178

Noyman-Veksler, G., Weinberg, D., Fennig, S., Davidson, L., & Shahar, G. (2013). Perceived stigma exposure in schizophrenia: The key role of self-concept clarity. *Self and Identity*, *12*, 663–674. https://doi.org/10.1080/15298868.2012.732265

Pallanti, S., Cantisani, A., & Grassi, G. (2013). Anxiety as a core aspect of schizophrenia. *Current Psychiatry Reports*, *15*, 354–358. https://doi.org/10.1007/s11920-013-0354-7

Pavlova, B., Perlis, R. H., Alda, M., & Uher, R. (2015). Lifetime prevalence of anxiety disorders in people with bipolar disorder: A systematic review and meta-analysis. *The Lancet Psychiatry*, *2*, 710–717. https://doi.org/10.1016/S2215-0366(15)00112-1

Pyle, M., Brabban, A., Drage, L., Spencer, H., Turkington, D., & Morrison, A. (2015). Associations between internalised stereotypes of psychosis and emotional dysfunction in people with psychosis not taking antipsychotic medication. *Psychosis*, *7*, 217–227. https://doi.org/10.1080/17522439.2014.980307

Pyle, M., Stewart, S. L. K., French, P., Byrne, R., Patterson, P., Gumley, A., . . . Morrison, A. P. (2015). Internalized stigma, emotional dysfunction and unusual experiences in young people at risk of psychosis. *Early Intervention in Psychiatry*, *9*, 133–140. https://doi.org/10.1111/eip.12098

Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385–401. https://doi.org/10.1177/014662167700100306

Rinaldi, M., Killackey, E., Smith, J., Shepherd, G., Singh, S. P., & Craig, T. (2010). First episode psychosis and employment: A review. *International Review of Psychiatry*, *22*, 148–162. https://doi.org/10.3109/09540261003661825

Rooke, O., & Birchwood, M. (1998). Loss, humiliation and entrapment as appraisals of schizophrenic illness: A prospective study of depressed and non-depressed patients. *British Journal of Clinical Psychology*, *37*, 259–268. https://doi.org/10.1111/j.2044-8260.1998.tb01384.x

Salcedo, S., Gold, A. K., Sheikh, S., Marcus, P. H., Nierenberg, A. A., Deckersbach, T., & Sylvia, L. G. (2016). Empirically supported psychosocial interventions for bipolar disorder: Current state of

the research. *Journal of Affective Disorders*, *201*, 203–214. https://doi.org/10.1016/j.jad.2016.05.018

Saraf, G., Paul, I., Viswanath, B., Narayanaswamy, J. C., Math, S. B., & Reddy, Y. J. (2017). Bipolar disorder comorbidity in patients with a primary diagnosis of OCD. *International Journal of Psychiatry in Clinical Practice*, *21*(1), 70–74. https://doi.org/10.1080/13651501.2016.1233344

Shahar, G., Weinberg, D., McGlashan, T. H., & Davidson, L. (2010). Illness related stress interacts with perception of the self as ill to predict depression in psychosis. *International Journal of Cognitive Therapy*, *3*, 202–210. https://doi.org/10.1521/ijct.2010.3.2.202

Singer, A. R., Addington, D. E., Dobson, K. S., & Wright, C. (2014). A pilot study of cognitive behavior therapy for depression in early psychosis. *Cognitive and Behavioral Practice*, *21*, 323–334. https://doi.org/10.1016/j.cbpra.2013.08.004

Sloman, L., Gilbert, P., & Hasey, G. (2003). Evolved mechanisms in depression: The role and interaction of attachment and social rank in depression. *Journal of Affective Disorders*, *74*, 107–121. https://doi.org/10.1016/S0165-0327(02)00116-7

Smith, D. J., Langan, J., Mclean, G., Guthrie, B., & Mercer, S. W. (2013). Schizophrenia is associated with excess multiple physical-health comorbidities but low levels of recorded cardiovascular disease in primary care: Cross-sectional study. *British Medical Journal Open*, *3*, e002808. https://doi.org/10.1136/bmjopen-2013-002808

Stain, H. J., Galletly, C. A., Clark, S., Wilson, J., Killen, E. A., Anthes, L., . . . Harvey, C. (2012). Understanding the social costs of psychosis: The experience of adults affected by psychosis identified within the second Australian national survey of psychosis. *Australian & New Zealand Journal of Psychiatry*, *46*, 879–889. https://doi.org/10.1177/0004867412449060

StataCorp (2015). *StataCorp stata statistical software: Release 14*. College Station, TX: Author.

Stip, E., Caron, J., Tousignant, M., & Lecomte, Y. (2017). Suicidal ideation and schizophrenia: contribution of appraisal, stigmatization, and cognition. *The Canadian Journal of Psychiatry*, *62*(10), 726–734. https://doi.org/10.1177/0706743717715207

Stowkowy, J., Perkins, D. O., Woods, S. W., Nyman, K., & Addington, J. (2015). Personal beliefs about experiences in those at clinical high risk for psychosis. *Behavioural and Cognitive Psychotherapy*, *43*, 669–675. https://doi.org/10.1017/S1352465814000307

Taylor, P. J., Hutton, P., & Wood, L. (2015). Are people at risk of psychosis also at risk of suicide and self-harm ? A systematic review and meta-analysis. *Psychological Medicine*, *45*, 911–926. https://doi.org/10.1017/S0033291714002074

Taylor, P. J., Pyle, M., Schwannauer, M., Hutton, P., & Morrison, A. (2015). Confirming the structure of negative beliefs about psychosis and bipolar disorder: A confirmatory factor analysis study of the Personal Beliefs about Experience Questionnaire and Personal Beliefs about Illness Questionnaire. *British Journal of Clinical Psychology*, *54*, 361–377. https://doi.org/10.1111/bjc.12079

Upthegrove, R., Ross, K., Brunet, K., McCollum, R., & Jones, L. (2014). Depression in first episode psychosis: The role of subordination and shame. *Psychiatry Research*, *217*, 177–184. https://doi.org/10.1016/j.psychres.2014.03.023

Veroniki, A. A., Jackson, D., Viechtbauer, W., Bender, R., Bowden, J., . . . Salanti, G. (2014). Methods to estimate the between-study variance and its uncertainty in meta-analysis. *Research Synthesis Methods*, 7, 55–79. https://doi.org/10.1002/jrsm.1164

Wagner, L. C., & King, M. (2005). Existential needs of people with psychotic disorders in Pôrto Alegre, Brazil. *British Journal of Psychiatry*, *186*, 141–145. https://doi.org/10.1192/bjp.186.2.141

Walsh, M. B. (2015). *Relating to the other in psychosis: An interpretative phenomenological analysis*. Unpublished doctoral thesis. University of Hertfordshire, Hatfield, UK.

Watson, P. W. B., Garety, P. A., Weinman, J., Dunn, G., Bbbington, P. E., Fowler, D., . . . Kuipers, E. (2006). Emotional dysfunction in schizophrenia spectrum psychosis: The role of illness perceptions. *Psychological Medicine*, *36*, 761–770. https://doi.org/10.1017/S0033291706007458

White, R. G., McCleery, M., Gumley, A. I., & Mulholland, C. (2007). Hopelessness in schizophrenia: The impact of symptoms and beliefs about illness. *The Journal of Nervous and Mental Disease*, *195*, 968–975. https://doi.org/10.1097/NMD.0b013e31815c1a1d

Williams, J. W., Plassman, B. L., Burke, J., Holsinger, T., & Benjamin, S. (2010). *Preventing Alzheimer's disease and cognitive decline. Evidence report/technology assessment No. 193. (Prepared by the duke evidence-based practice center under contract No. HHSA 290-2007-10066-I)*. Rockville, MD: Agency for Healthcare Research and Quality.

World Health Organisation (1993). *International statistical classification of diseases and related health problems*. Geneva, Switzerland: Author.

Yung, A. R., Phillips, L. J., Pan, H., Francey, S. M., Mcfarlane, C. A., Hallgren, M., & Mcgorry, P. D. (2003). Psychosis prediction: 12-month follow up of a high-risk ('prodromal') group. *Schizophrenia Research*, *60*(1), 21–32. https://doi.org/10.1016/S0920-9964(02)00167-6

Yung, A. R., Yuen, H. P., McGorry, P. D., Phillips, L. J., Kelly, D., Dell'Olio, M., . . . Godfrey, K. (2005). Mapping the onset of psychosis: The comprehensive assessment of at-risk mental states. *Australian and New Zealand Journal of Psychiatry*, *39*, 964–971. https://doi.org/10.1111/j.1440-1614.2005.01714.x

Supporting Information

The following supporting information may be found in the online edition of the article:

Table S1. Search terms used for each individual database.
Table S2. Individual effect sizes and confidence intervals for studies.