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## Mindfulness- and acceptance-based interventions for psychosis: Our current understanding and a meta-analysis

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### ABSTRACT

In promoting optimal recovery in persons with psychosis, psychological interventions have become a key element of treatment, with cognitive behavioural therapy being widely recommended in clinical practice guidelines. One key area of development has been the trialling of “third wave” cognitive behavioural interventions, which promote mindfulness, acceptance and compassion as means of change. Trials to date have demonstrated encouraging findings, with beneficial effects observed on measures of psychotic symptoms. This meta-analysis evaluated the efficacy of third wave interventions for the treatment of psychosis in randomised controlled trials, with psychotic symptoms as the primary outcome. Overall, 10 studies were included. The primary outcome demonstrated a small but significant effect ( $g = 0.29$ ) for third wave interventions compared with control post-treatment. Trials of group format mindfulness-based interventions showed larger effects ( $g = 0.46$ ) than individual acceptance and commitment therapy based interventions ( $g = 0.08$ ), although methodological differences between trials were noted. Among secondary outcomes, a moderate, significant treatment effect ( $g = 0.39$ ) was found for depressive symptoms, but no significant effects were found on specific measures of positive and negative symptoms, hallucination distress, or functioning/disability. A moderate effect on mindfulness ( $g = 0.56$ ) was observed, but not on acceptance. Overall, findings indicate that third wave interventions show beneficial effects on symptoms in persons with psychotic disorders. However, further research is required to determine the efficacy of specific models of treatment.

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### 1. Introduction

As psychological therapies for psychosis have continued to evolve, one of the key developments has been to apply “third-wave” cognitive behavioural therapies (CBTp), with a focus on mindfulness and acceptance, to this population (Khoury et al., 2013b; Thomas et al., 2014). Third-wave CBTp address one's relationship with, and responses to, experiences and symptoms, rather than attempting to change them. These interventions are grounded in principles such as non-judgemental awareness, self-compassionate acceptance and defusion (Hayes, 2004a). They include mindfulness-based interventions (MBIs), acceptance-based approaches (e.g., Acceptance and Commitment Therapy, ACT), and compassion-based approaches (e.g., Compassion Focused

Therapy, CFT). Mindfulness involves intentionally paying attention to present-moment experiences (including psychotic experiences) non-judgementally (Kabat-Zinn, 1994). This is typically cultivated through daily meditation practices and experiential exercises, via group-format courses (Strauss et al., 2015). ACT, a theoretically related but distinct psychotherapy approach, promotes acceptance of difficult experiences and defusion from patterns of thinking that dominate awareness, whilst committing to valued, meaningful activities (Hayes et al., 2006). Mindfulness exercises can feature in ACT, but are less central than in MBIs, with a wider repertoire of exercises and metaphors used, aiming to promote change in valued living. Compassion-based approaches foreground cultivating compassion towards self and others, given high levels of self-criticism associated with many mental disorders (Gilbert, 2009).

From a theoretical perspective, third-wave interventions that foreground non-judgemental and self-compassionate acceptance of experiences and symptoms would be expected to be of particular benefit to people with psychosis, given that unpleasant experiences and symptoms may be present in the longer term. Such therapies often use formal

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mindfulness practices or experiential exercises that focus on maintaining a 'decentered awareness' in the presence of internal psychotic experience (Chadwick et al., 2009). It has been suggested this process provides an alternate relationship with psychotic experience and decreases the likelihood of becoming consumed by unhelpful, habitual reactions (Abba et al., 2008; Chadwick et al., 2009). Furthermore, by observing psychotic symptoms, such as voices or delusional thoughts, with an open, non-judgemental and curious awareness and without unhelpfully reacting, patients are better able to reclaim power over such experiences (Abba et al., 2008). Additionally, it has been suggested that acknowledgment and non-judgemental acceptance of psychotic symptoms facilitates an increased awareness of associated negative judgements about the self (Goodliffe et al., 2010) which third wave interventions might help to address by reducing attachment to negative self-beliefs. Furthermore, compassion-based approach may facilitate greater self-compassion as a means to reduce the impact of negative judgements about the self. Moreover, a focus in third wave approaches on the whole person rather than on symptoms is considered to be vital in re-establishing one's identity beyond psychosis (Goodliffe et al., 2010).

In a meta-analysis of third-wave or mindfulness- and acceptance-based interventions for psychosis, Khoury et al. (2013b) reported a small-to-moderate treatment effect on positive symptoms from pre- to post-therapy (Hedge's  $g = 0.32$ ). Likewise, a recent meta-analysis of Cramer et al. (2016) identified moderate between-group treatment effects of mindfulness- and acceptance-based therapies on positive symptoms ( $SMD = 0.57$ ). However, the number of studies available for both these previous meta-analyses was limited for examining between-group effects ( $\leq 8$ ). Furthermore, analysis for between group differences on positive symptoms by Cramer et al. (2016) included only one mindfulness-based study. Since these recent meta-analyses a number of further trials have been published, including two large RCTs (Chadwick et al., 2016; Shawyer et al., 2016). Given these new trials, we conducted a comprehensive and up-to-date meta-analysis of RCTs, with an aim of determining the efficacy of these third-wave interventions for psychosis.

## 2. Method

### 2.1. Eligibility criteria

Studies were selected meeting the following criteria: 1) randomised controlled trials, 2) the experimental treatment was a mindfulness-, acceptance- or compassion-based intervention for psychosis, 3) participants were adults diagnosed with a psychotic disorder, with >50% having a schizophrenia/schizoaffective disorder diagnosis, and 4) included quantitative measures of the primary or secondary outcomes. Both individual- and group-format interventions were considered. We excluded studies that: 1) relied on self-reported symptomatology rather than diagnosis, 2) targeted participants with comorbid intellectual disability or substance dependence, 3) reanalysed data previously reported in another included study, or 4) were not published in peer-reviewed journals.

### 2.2. Information sources

Literature searches were conducted using PsycINFO, MedLine and EMBASE, from the first available date until September 14th 2016. Additionally, reference lists of prior reviews and retrieved articles were manually searched.

The following terms were combined in keyword searches: *mindfulness, meditation, acceptance, person-based cognitive therapy, compassion-focused, or compassionate mind; and schizophrenia, psychotic, psychosis, paranoid, delusion, hallucination, distressing voices, voice hearing, or hearing voice*.

### 2.3. Data collection process and data items

Data were initially extracted by SL and checked by MF. The current analysis was limited to end-of-treatment data as few studies reported follow-up data, with varied time-points, and only included outcomes that could be aggregated from a minimum of three studies. Where both treatment-as-usual (TAU) and active control group data were reported, active control group data were used to compare with treatment group effects.

### 2.4. Risk of bias in individual studies

The quality of studies was assessed using the Clinical Trial Assessment Measure (CTAM; Tarrier and Wykes, 2004), which has demonstrated adequate inter-rater reliability, internal consistency and concurrent validity in psychological intervention for psychosis trials (Tarrier and Wykes, 2004). Two authors (S.L. and M.F.) independently conducted quality ratings for the included studies, with discrepancies resolved by discussion.

### 2.5. Synthesis of results

The primary outcome was the overall severity of psychotic symptoms. Secondary outcomes were positive and negative symptoms, hallucination-related distress, delusion-related distress, depressive symptoms, and functioning and disability. Process variables relating to mindfulness, acceptance and compassion were also considered. Supplementary analyses were conducted to determine the treatment effect on psychotic symptoms for theoretically defined contrasts: therapy model (mindfulness-based vs acceptance-based vs compassion-focused); individual vs group format; and comparison group (treatment-as-usual alone vs active control).

Study outcomes were expressed as Hedge's  $g$  (bias-adjusted standardised mean difference), which were calculated using end of treatment means and pooled standard deviations for treatment and control groups. Between-group effect size data were then synthesised using Comprehensive Meta-Analysis Version 3.0. A random effects model was used given expected differences between intervention protocols and study designs. Heterogeneity was tested using a  $\chi^2$  test and the  $I^2$  statistic calculated, with 25%, 50% and 75% representing low, moderate or high heterogeneity (Higgins et al., 2003). Publication bias was examined using both Rosenthal's (1979) and Orwin's (1983) fail-safe  $N$  (1979) methods.

### 2.6. Moderator analyses

Meta-regression was planned to assess whether the primary outcome was affected by three continuous moderators: 1) study quality (CTAM score), 2) treatment duration in sessions, and 3) treatment duration in hours.

## 3. Results

### 3.1. Study selection

A total of 836 potentially relevant studies were identified and screened for inclusion. After removing duplicates 735 studies remained and the first author screened their titles and abstracts. Following review, 699 studies were excluded that did not meet the inclusion criteria. A further 36 studies were selected for full-text evaluation (independently by SL and MF, with discrepancies resolved by NT); 22 did not meet inclusion criteria. Four studies required a more considered evaluation, and were subsequently excluded: 1) Bach and Hayes (2002) included rehospitalisation data only, which was not a pre-specified outcome, 2) Tyrberg et al. (2016) reported outcomes for rehospitalisation and values-based living, 3) Chadwick et al. (2009) reported change scores

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