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## Mindfulness-Based Interventions in the Treatment of Symptoms of Psychosis: A Narrative Systematic Review Interventions basées sur la pleine conscience dans le traitement des symptômes de la psychose : un examen systématique narrative

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### ABSTRACT

Although there is a growing body of research on the value of mindfulness for a range of mental health conditions, evidence regarding mindfulness for individuals with psychosis is much more limited. The purpose of this article was to conduct a narrative systematic review of randomized controlled trials evaluating the effectiveness of mindfulness-based techniques with individuals experiencing symptoms of psychosis. Eligibility criteria for the studies included random allocation, a focus on participants with psychosis, implementation of mindfulness-based interventions, and inclusion of a control group. A majority of measures across studies showed no significant treatment effect. Therefore, studies to date do not indicate that mindfulness-based interventions have an impact on symptoms of psychosis. Across trials, mindfulness interventions varied greatly. Furthermore, mindfulness interventions were designed to help individuals cope with symptoms and not necessarily to make them go away. Therefore, future studies should consider measuring functional outcomes, not symptom-related outcomes.

### RÉSUMÉ

Bien qu'il existe un nombre croissant de recherches sur la valeur de la pleine conscience pour une gamme de problèmes de santé mentale, les éléments de preuve concernant la pleine conscience chez les personnes souffrant de psychose sont beaucoup plus limités. Le but de cet article était de procéder à un examen systématique narratif des essais contrôlés randomisés (ECR) évaluant l'efficacité des techniques basées sur la pleine conscience avec des individus qui éprouvent des symptômes de psychose. Les critères d'admissibilité pour les études comprenaient : la répartition aléatoire, l'accent sur les participants souffrant de psychose, la mise en œuvre des interventions fondées sur la pleine conscience, et l'inclusion d'un groupe témoin. La majorité des mesures à travers des études n'a montré aucun effet significatif du traitement. Par conséquent, les études à ce jour n'indiquent pas que des interventions fondées sur la pleine conscience ont un impact sur les symptômes de la psychose. Les interventions fondées sur la pleine conscience varient considérablement à travers les essais. De plus, les interventions fondées sur la pleine conscience ont été conçues pour aider les individus à composer avec les symptômes, pas nécessairement pour les faire disparaître. Par conséquent, des études à venir devraient viser à mesurer les résultats fonctionnels, pas les résultats liés aux symptômes.

Psychosis is a mental health condition marked by a break with reality (Fusar-Poli et al., 2012). Individuals experiencing symptoms of psychosis often feel confusion and have difficulty distinguishing what is real from what is not. Symptoms can include delusions (fixed false beliefs), paranoia, hallucinations (auditory and visual), disorganized speech or behaviour (thought disorder), rapid mood changes, catatonia, anhedonia, and amotivation (Fusar-Poli et al., 2012). Regardless of factors such as gender, race, culture, religion, or socioeconomic status, 3% of the world's population experience symptoms of psychosis (Milliken, 2003). On average, symptoms of psychosis are left untreated for 2 years, and individuals experiencing symptoms of psychosis will attempt to access services 2.3 times before they are successful in receiving treatment (Lieberman & Fenton, 2000). Though symptoms of psychosis may be present in a number of other health conditions ranging from mood disorders to substance use, it is most prominent in schizophrenia. In Canada, it is estimated that 234,305 persons are diagnosed with schizophrenia each year, and the economic burden from this condition is estimated at \$6.85 billion per year (Goeree et al., 2005). Though interventions such as antipsychotic medication and assertive community treatment have been shown effective in treatment (Lehman, Goldman, Dixon, & Churchill, 2004), it is important to explore the value-added contribution of psychotherapeutic interventions.

Mindfulness is an evidence-based psychotherapy approach that has been implemented in many settings with a range of populations, including individuals with mental illness. A core element of mindfulness involves the ability to intentionally be aware of the present moment without judgement (Kabat-Zinn, 1990). Over the past decade, through growing scientific and clinical literature, mindfulness has gained attention in the Western medical world with consistent interest in its applications and mechanisms of action (Abbey, 2012; Biegel, Brown, Shapiro, & Schubert, 2009; Hofmann, Sawyer, Witt, & Oh, 2010; Sephton et al., 2007). There are three main areas of focus in mental health care literature: mindfulness-based interventions, mindfulness as a factor in the therapeutic alliance, and mindfulness as a medium for informing psychotherapy practice (Shapiro & Carlson, 2009). As such, mindfulness has become the basis for tailored interventions in the treatment of specific psychiatric diagnoses such as depression (Segal, Williams, & Teasdale, 2002), eating disorders (Kristeller & Wolever, 2011), and substance use (Bowen et al., 2009).

Meditation is a general term that can be defined as “a family of self-regulation practices that focus on training attention and awareness” (Walsh & Shapiro, 2006, p. 227). Historically, clinical literature has warned against the use of meditation with people experiencing symptoms of psychosis (Kuijpers, van der Jeijden, Tuinier, & Verhoeven, 2007); however, with the widespread success of mindfulness-based techniques for a variety of mental health conditions, the application of these techniques to clients experiencing symptoms of psychosis has increased (Pinto, 2009). A recent study has demonstrated the clinical effectiveness of mindfulness for people with symptoms of psychosis (Chadwick, Newman Taylor, & Abba, 2005). In addition, recent studies have also shown the effectiveness of acceptance

and commitment therapy, a mindfulness-based technique, in the treatment of individuals with psychotic symptoms (Bach, Gaudiano, Hayes, & Herbert, 2012).

The purpose of this article is to examine evidence for the effectiveness of mindfulness-based techniques on symptoms of psychosis through a systematic review of randomized controlled trials (RCTs) conducted by Bach and Hayes (2002), Chadwick, Hughes, Russell, and Russell (2009), Gaudiano and Herbert (2006), Langer, Cangas, Salcedo, and Fuentes (2012), Shawyer et al. (2012), and White et al. (2011).

#### METHOD

This article uses the systematic narrative review method proposed by Pawson (2006). This five-step process includes (a) identifying the review question, (b) searching for primary studies, (c) quality appraisal, (d) extracting the data, and (e) synthesis.

##### *Search Strategy*

Two reviewers (the first author and a health department information specialist) independently identified relevant English-language RCTs. A systematic search of the following databases was conducted: Academic Search Premier; MEDLINE; Nursing & Allied Health Collection, Comprehensive; Psychology and Behavioral Sciences Collection; CINAHL Plus; SocINDEX; Database of Abstracts of Reviews of Effects; Cochrane Database of Systematic Reviews; and PsycINFO. Search terms used were mindfulness OR mindfulness based therap\* OR mindfulness based techniq\* OR mindfulness based stress reduction OR "MBSR" OR "mindfulness based cognitive therapy" OR "MBCT" OR "acceptance and commitment therapy" OR "ACT" or "dialectical behave\* therapy" OR "DBT" AND treatment AND psychosis AND "RCT" OR meta-analysis OR systematic review OR control trial OR review OR randomized control trial OR cohort studies. There were 143 total search citations found, and 101 articles were excluded by title and abstract. These articles did not have a focus of the combination of mindfulness and symptoms of psychosis. Forty-two studies were retrieved for further evaluation (see Figure 1).

##### *Eligibility Criteria*

The first and fourth authors independently applied the inclusion and exclusion criteria to the 42 articles retrieved for further evaluation. Inclusion criteria included the following: (a) random allocation of treatment, (b) inclusion of participants presenting with symptoms of psychosis, (c) inclusion of participants receiving a mindfulness-based intervention, and (d) inclusion of participants receiving no active treatment (control). Exclusion criteria included the following: (a) non-randomized studies, (b) studies published in a language other than English, and (c) studies using duplicate or pooled data. Thirty-six studies were excluded by eligibility criteria.

Using the eligibility criteria, the reviewers initially agreed on four articles. In addition, each reviewer also selected two separate and distinct articles. After a discussion utilizing the eligibility criteria, the reviewers agreed on two more articles. The final count after agreement was six articles (see Table 1). The initial four agreed-upon articles were Chadwick et al. (2009), Gaudio and Herbert (2006), Langer et al. (2012), and White et al. (2011). The final two articles were Bach and Hayes (2002) and Shawyer et al. (2012).

Mindfulness-based interventions were defined as any psychotherapeutic intervention that contained a mindfulness component. Mindfulness is the ability to intentionally be aware of the present moment without judgement (Kabat-Zinn, 1990). In practice, for someone experiencing symptoms of psychosis this can take the form of experiencing auditory or visual hallucinations, accepting them without resisting or redirecting, and not judging themselves because of their experience.

### *Data Extraction*

The first and fourth authors independently extracted the data from each study using the Critical Appraisal Skills Programme (CASP) Checklist for Randomized Controlled Trials (CASP, 2013). Data extracted included demographics, methods, interventions, and results. Quality was appraised by examining trial focus, randomization, follow-up, blinding, size and precision of treatment effect, application of results (whether the results were locally applicable), clinically important outcomes (significant outcome measures), and consideration of benefits versus harms (were any individuals harmed during the trial) (see Table 2).

Figure 1  
*Flow of articles through systematic review process*

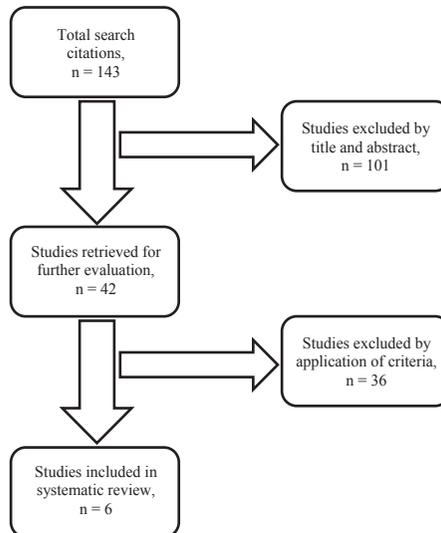


Table 1  
Description of Trials Chosen for Systematic Review

Trials	Sample Size (Completed)	Condition	Intervention	Outcome measures	Outcome measures administered
Bach & Hayes (2002)	T = 40 (35) C = 40 (35)	T = TAU + ACT C = TAU	Four 50-minutes individual sessions provided 72 hours apart; led by co-author (Bach)	Rehospitalization; symptom distress and believability self-report	Baseline; 4-month follow up; both by psychology intern (co-author)
Chadwick et al. (2009)	T = 11 (9) C = 11 (9)	T = Group-based mindfulness C = Waiting list	30-minute group sessions twice a week for 5 weeks, practice at home with guided CDs and 5 additional weeks of home practice; led by co-author (Hughes)	<i>Clinical Outcomes in Routine Evaluation</i> ; <i>Southampton Mindfulness Questionnaire</i> ; <i>Psychiatric Symptom Rating Scale</i> ; <i>Southampton Mindfulness Voices Questionnaire</i> ; <i>Beliefs About Voices Questionnaire-revised</i>	Baseline; 10 weeks
Gaudiano & Herbert (2006)	T = 20 (18) C = 20 (20)	T = ETAU + ACT C = ETAU	Four 1-hour individual sessions; led by ACT therapist	<i>Brief Psychotic Rating Scale</i> ; <i>Clinical Global Impressions Scale</i> ; symptom distress and believability self-report; <i>Sheehan Disability Scale</i> ; Rehospitalization	Baseline; discharge; 4-month follow up
Langer et al. (2012)	T = 11 (7) C = 12 (11)	T = Group-based mindfulness C = Waiting list	Eight 60-minute group sessions once a week; led by MBCT therapist	<i>Clinical Global Impression-Schizophrenia Scale</i> ; <i>Acceptance and Action Scale</i> ; <i>Southampton Mindfulness Questionnaire</i>	Baseline; ?; by clinician blind to treatment allocation
Shawyer et al. (2012)	T = 12 (11) C = 14 (13) W = 17 (16)	T = TORCH C = Befriending	Fifteen 50-minutes individual sessions once a week and 2 sessions during the 6-month follow up period; led by 5 therapists trained in CBT, ACT & mindfulness	Compliance with harmful command hallucinations self-report; Confidence in resisting harmful hallucinations and coping with general commands self-report; <i>Positive and Negative Syndrome Scale</i> ; modified <i>Global Assessment of Functioning</i> ; <i>Single Hallucination Episode Record</i> ; <i>Psychotic Symptom Rating Scales</i> ; <i>Quality of Life, Enjoyment and Satisfaction Questionnaire</i> ; <i>Subjective Feelings and General Activities subscales</i> ; <i>Client Satisfaction Questionnaire</i> ; <i>Voices Acceptance and Action Scale</i> ; <i>Beliefs About Voices Questionnaire</i> ; <i>Insight Scale</i>	Baseline; end of therapy; 6-month follow up; by rater blind to treatment allocation

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Table 1 (continued from previous page)

White et al. (2011)	T = 14 (14) C = 13 (10)	T = ACT + TAU C = TAU	Ten 60-minute individual sessions once a week led by lead author (White)	<i>Hospital Anxiety and Depression Scale; Positive and Negative Syndrome Scale; Acceptance and Action Questionnaire-II; Kentucky Inventory of Mindfulness Skills; Working Alliance Inventory-short form revised</i>	Baseline; 3-month follow up; by raters blind to treatment allocation
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Note. T = Treatment group; C = Control group; W = Wait list; TAU = Treatment as usual; ETAU = Enhanced treatment as usual; ACT = Acceptance and Commitment Therapy; TORCH = Treatment of Resistant Command Hallucinations

Table 2  
Selected Critical Appraisal Skills Programme (CASP) Data from Trials Chosen for Systematic Review

Trials	Did the trial address a clearly focused issue? <sup>a</sup>	Were all of the patients who entered the trial properly accounted for at its conclusion? <sup>b</sup>	Were patients, health workers, and study personnel “blind” to treatment?	Were the groups similar at the start of the trial? <sup>c</sup>	How large was the treatment effect?
Bach and Hayes (2002)	Yes	Yes	Patients: Yes Health workers: Yes Study personnel: No	Yes	Rehospitalization*; believability self-report*
Chadwick et al. (2009)	Yes	Yes	Patients: Yes Health workers: No Study personnel: No	Yes	<i>Clinical Outcomes in Routine Evaluation</i> ^; <i>Southampton Mindfulness Questionnaire</i> ^; <i>Southampton Mindfulness Voices Questionnaire</i> ^

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Table 2 (continued from previous page)

Gaudio and Herbert (2006)	Yes	Yes	Few patients were lost to follow up; Intention to Treat (ITT) data used	Patients: No Health workers: No Study personnel: No	Yes for all factors except for sex	Symptom distress self-report*; <i>Clinical Global Impressions Scale- (Improvement Subscale)</i> ^
Langer et al. (2012)	Yes	Yes	Method: Computer-generated simple randomization without blocking or stratification	Patients: Yes Health workers: Yes Study personnel: No	Yes	<i>Southampton Mindfulness Questionnaire</i> *
Shawyer et al. (2012)	Yes	Yes	Method: Variable length blocks from www.randomization.com	Patients: Yes Raters: Yes Study personnel: No 5 uncorrected breaches of blindness	Yes for all factors except for sex	None
White et al. (2011)	Yes	Yes	Method: Computerized randomization using a predetermined schedule of permuted blocks of random size	Patients: Yes Raters: Yes Study personnel: No 2 uncorrected breaches of blindness	Yes	<i>Positive and Negative Syndrome Scale (negative symptoms subscale)</i> ^; <i>Kentucky Inventory of Mindfulness Skills (total)</i> ^

Note. <sup>a</sup> A trial can be considered “clearly focused” in terms of: the population studied, the intervention given, the comparator given, and the outcomes considered; <sup>b</sup> Patients can be considered “properly accounted for” if: the trial was not stopped early, and the patients were analyzed in the groups to which they were randomized; <sup>c</sup> Groups can be considered “similar” based on other factors that could affect outcome such as: age, sex, and social class; \*Measures reporting a large treatment effect; ^Measures reporting a medium treatment effect.

## RESULTS

Bach and Hayes (2002) conducted a randomized controlled trial to study the impact of a brief four-session version of Acceptance and Commitment Therapy (ACT), a mindfulness-based intervention, on inpatients hospitalized with positive psychotic symptoms. They report that ACT is based on the idea that “maladaptive behaviours are produced by unhealthy attempts to avoid or suppress thoughts, feelings, or bodily sensations” (p. 1130). Through ACT, patients develop four skill areas: (a) to identify and disregard internal control strategies; (b) to accept difficult thoughts and feelings; (c) to practice and learn the ability to “just notice” difficult thoughts and feelings without struggling with, arguing with, or believing them as true; and (d) to focus on obvious behaviours that produce outcomes with personal value. Eighty inpatients experiencing positive psychotic symptoms such as auditory hallucinations or delusions at the time of admission and receiving outpatient treatment follow-up at discharge participated in the study. The 80 participants were randomly assigned, 40 per treatment condition, to either treatment as usual (TAU) or ACT plus TAU. TAU consisted of medication, three or more psychoeducational groups (one or two times per week for 40 minutes per session), and the potential for individual psychotherapy (minimum of once per week). This also includes outpatient case management and monthly meetings with a psychiatrist. ACT plus TAU consisted of the TAU conditions described above plus four 50-minute ACT sessions conducted by a psychology intern (first author Patricia Bach). The first session, an overview of ACT, took place within 72 hours of admission. The second session, held within 72 hours of the first, focused on accepting symptoms. The third session, held within 3 to 5 days of the second, focused on accomplishing value-oriented goals. The fourth session, held within 72 hours of discharge, reviewed the first three sessions.

With the exception of case managers, inpatient and outpatient staff were blind to the identity of the patients. Outpatient case managers collected follow-up materials and were aware of participant identity, but were blind to treatment allocation. Outcome measures collected were days to rehospitalization and self-reports of symptom distress and believability. Data were collected at baseline and four-months follow-up. Thirty-five participants from each treatment allocation completed follow-up. ACT participants were rehospitalized at a statistically significant lower rate [Wilcoxon's (1,  $N = 70$ ) = 4.26,  $p < 0.05$ ]. There was also a statistically significant difference in the symptoms believability self-report [ $F_{(1,29)} = 4.36$ ,  $p < 0.05$ ]. The results suggest that the ACT participants were rehospitalized fewer times and had less belief in their hallucinations and delusions.

Chadwick et al. (2009) conducted a randomized feasibility trial to assess the feasibility of randomized evaluation of group mindfulness therapy for psychosis. They used a group mindfulness intervention (Chadwick, 2006), which is tailored to individuals with distressing psychosis and which links distress to how individuals relate to their psychotic experiences. Components of this mindfulness-based group intervention include (a) an understanding through meditation and discussion that distress comes from reactions to psychotic symptoms; (b) the practice

of “letting go” of reactions such as fighting, ruminating, and self-judgement; and (c) the experience of observing and accepting psychotic experiences as calming and empowering. The second author of this study, Stephanie Hughes (who was supervised by first author, Paul Chadwick), led the group interventions. Twenty-two individuals experiencing distressing psychosis were assessed and included in the study. The 22 participants were randomly assigned, 11 per group, through the North Wales Organization for Randomized Trials in Health to either group-based mindfulness training or a waiting list for this therapy.

Group-based mindfulness training consisted of mindfulness sessions twice a week for 5 weeks in addition to home practice with guided audio CDs. This was followed by an additional 5 weeks of home practice. Outcome measures collected were Clinical Outcomes in Routine Evaluation (CORE), Southampton Mindfulness Questionnaire (SMQ), Psychiatric Symptom Rating Scale, Southampton Mindfulness Voices Questionnaire (SMVQ), and Beliefs About Voices Questionnaire-Revised. Data were collected at baseline and after 10 weeks. Nine participants from each treatment allocation completed follow-up.

No significant treatment effects were found in any of the five measures. Three measures—CORE, SMQ, and SMVQ—provided moderate effect sizes ( $d = 0.56$ ,  $d = 0.86$ , and  $d = 0.47$ , respectively). Secondary analysis was completed after the waiting list participants completed the mindfulness training. With all data combined, pre- and postintervention comparison showed a statistically significant difference in favour of the group-based mindfulness intervention in both the CORE ( $p = 0.013$ ; 95% CI: 0.08, 0.59) and the SMQ ( $p = 0.037$ ; 95% CI: 0.6, 16.0). The CORE measures positive changes in adult mental health, particularly those brought about by psychological interventions (Evans et al., 2000). The results of the CORE suggested that participants in the group-based mindfulness intervention showed greater positive change in their mental health. The SMQ is a measure of mindful awareness of distressing thoughts and images (Chadwick et al., 2008). The results of the SMQ suggested that participants in the group-based mindfulness intervention showed greater mindful awareness of their distressing thoughts and images.

Gaudio and Herbert (2006) conducted a prospective, nonblinded, randomized pilot trial to determine the impact of a brief ACT intervention on inpatients hospitalized with psychotic symptoms. The delivery of ACT was based on the modified treatment manual used in Bach and Hayes (2002, see above). Forty inpatients with symptoms of psychosis upon admission were randomized into two groups. The randomization method used was computer-generated simple randomization without blocking or stratification. Twenty-one patients were allocated to enhanced treatment as usual (ETAU), and 19 were allocated to ETAU plus ACT. ETAU consisted of medication and management, case management, and psychotherapy.

Therapy consisted of attending various groups twice daily and individual therapy as needed. The enhanced portion included a comprehensive assessment of psychiatric symptoms and ACT therapists meeting with the ETAU condition

participants to control for individual attention. The ETAU plus ACT condition consisted of the ETAU condition described above plus the ACT protocol used in Bach and Hayes (2002). Outcome measures collected were rehospitalization, symptom distress and believability self-report, Brief Psychotic Rating Scale, Clinical Global Impressions Scale (CGIS), and Sheehan Disability Scale. Data were collected at baseline, discharge, and 4-month follow-up. Eighteen participants from the treatment condition and 20 participants from the control condition completed through to follow-up. Intention to treat (ITT) data were used to account for participants lost to follow-up. All data were trending in the expected direction. A statistically significant difference was found in the distress related to hallucinations self-report ( $F_{1,26} = 4.62, p < 0.05$ ). A marginally significant difference was found in favour of the ACT group on the CGIS-Improvement subscale [CGIS-I] ( $t_{27} = 2.00, p = 0.05$ ). The CGIS-I measures how much the participants' illness has improved versus baseline before the intervention (Busner & Targum, 2007). The results suggested that participants in the ACT group showed greater improvement in their illnesses.

Langer et al. (2012) conducted a randomized controlled trial to study the impact of group-based mindfulness therapy on individuals experiencing psychosis. They used the study structure of Chadwick et al. (2009) and the intervention structure of mindfulness-based cognitive therapy (MBCT) as proposed by Segal et al. (2002). This includes incorporating mindfulness techniques such as the body scan, mindfulness of hearing, mindfulness of breathing, mindful walking, and informal meditation practices, in addition to using metaphors, poems, and exercises to highlight the contrast between responding mindfully and responding automatically.

Twenty-three patients with a diagnosis of a psychotic disorder were randomized into two groups. Twelve were allocated to a waiting list control group. Eleven were allocated to the group-based mindfulness intervention. Participants in the treatment group attended eight 60-minute weekly sessions of MBCT. Home practice with handouts, CDs of guided meditations, and homework were also included. Outcome measures collected were Clinical Global Impression-Schizophrenia Scale, Acceptance and Action Scale, and SMQ. Data were collected at baseline and postintervention by a clinician blind to treatment allocation. Eleven participants from the control group and 7 participants from the treatment group completed the study. All outcomes were trending in the expected direction. A statistically significant difference was found in the SMQ ( $T = 2.445; p = 0.028; d = 1.306$ ). The results of the SMQ suggest that participants in the group-based mindfulness intervention showed greater mindful awareness of their distressing thoughts and images.

Shawyer et al. (2012) conducted a prospective, single (rater)-blind randomized controlled trial of the effect of acceptance-based cognitive behavioural therapy on command hallucinations in individuals with a psychotic disorder. The intervention, Treatment of Resistant Command Hallucinations (TORCH), is based on Bach and Hayes' (2002) brief ACT approach and focuses on the following: (a)

developing ability to “just notice” voices and thoughts instead of believing/acting on them, (b) accepting unpleasant voices, and (c) accomplishing value-oriented goals while experiencing unpleasant voices. The control is a manualized intervention known as *befriending*, which provides control participants with the same amount of therapist engagement but consists of a series of interactions on neutral topics that are like having a conversation with an acquaintance while avoiding conversation about symptoms and problems.

Forty-four participants were randomized into three categories. Twelve were allocated to TORCH, 14 were allocated to befriending, and 17 were allocated to waitlist (9 of them were later allocated to TORCH and 8 to befriending). Variable-length blocks from [www.randomization.com](http://www.randomization.com) randomized participants. A team of five psychologists trained in cognitive-behavioural therapy (CBT), ACT, and mindfulness provided the TORCH intervention. It was delivered in fifteen 50-minute individual sessions once a week, and 2 sessions during the 6-month follow-up period. Outcome measures collected were compliance with harmful command hallucinations self-report, confidence to resist harmful command hallucinations self-report, confidence in coping with command hallucinations self-report, Positive and Negative Syndrome Scale, modified Global Assessment of Functioning, Single Hallucination Episode Record, Psychotic Symptom Rating Scales, Quality of Life Enjoyment and Satisfaction Questionnaire—Subjective Feelings and General Activities subscales, Client Satisfaction Questionnaire, Voices Acceptance and Action Scale, Beliefs About Voices Questionnaire, and the Insight Scale. A rater blind collected data at baseline, end of therapy, and 6-month follow-up to treatment allocation. Eleven participants who were allocated to TORCH, 14 to befriending, and 16 to waiting list completed the study.

None of the outcome measures reported any significant differences between TORCH and befriending. When the results from the TORCH and befriending treatments were combined and compared to the waiting list group, statistically significant treatment effects were found in confidence in coping with command hallucinations self-report ( $d = 1.07$ ;  $p < 0.01$ ); Positive and Negative Syndrome Scale-negative symptoms [PANSS-Negative] ( $d = 0.96$ ;  $p < 0.01$ ); Positive and Negative Syndrome Scale-general psychopathology symptoms [PANSS-General] ( $d = 0.85$ ;  $p < 0.05$ ); Positive and Negative Syndrome Scale-total score [PANSS-Total] ( $d = 1.01$ ;  $p < 0.01$ ); Quality of Life Enjoyment and Satisfaction Questionnaire-general activities [Q-LES-Q-General] ( $d = 0.96$ ;  $p < 0.05$ ); and life satisfaction ( $d = 0.68$ ;  $p < 0.05$ ).

The confidence in coping with command hallucinations self-report is a measure of how confident participants are in their ability to successfully cope with their command hallucinations. The results suggested that the participants were able to successfully cope with their command hallucinations.

The PANSS measures the symptom severity and two symptom types (positive and negative) of schizophrenia (Kay, Fiszbein, & Opler, 1987). The PANSS-negative scale measures the severity of negative symptoms (e.g., blunted affect, emotional withdrawal, social withdrawal, poor rapport) in participants. The results

suggest that the active intervention participants showed fewer negative symptoms. The PANSS-general scale measures the severity of general psychopathology symptoms (e.g., somatic concerns, anxiety, guilty feelings, tension, depression) in participants. The results suggested that the active intervention participants showed fewer general psychopathology symptoms. The PANSS-total score measures the total score of all symptoms subscales. The results suggested that active intervention participants showed fewer symptoms in total.

The Q-LES-Q is a measure of how much participants display enjoyment and satisfaction in various areas of daily functioning (Endicott, Nee, Harrison, & Blumenthal, 1993). The Q-LES-Q-General measures overall levels of satisfaction in areas such as physical health, mood, relationships, work, socioeconomic status, and sexual drive, among other domains. The results suggested that active intervention participants showed greater quality of life, enjoyment, and satisfaction in areas of general activity.

White et al. (2011) conducted a prospective, open blind, randomized feasibility trial examining the use of ACT in combating emotional dysfunction following psychosis. The ACT intervention, similar to those described above, was designed specifically for this trial. Its components included (a) distinguishing between internal and sensory experience; (b) recognizing how individuals get caught in struggles to move from suffering; (c) moving toward values; (d) distancing ourselves from our stories; (e) exploring the problem of trying to control difficult mental experiences; (f) focus on context, not content, of difficult mental experiences; and (g) exploring the worries associated with psychosis.

Twenty-seven participants were randomized by a computer using a predetermined schedule of permuted blocks of random size into two groups. Thirteen were allocated to treatment as usual (TAU), and 14 were allocated to ACT plus TAU. TAU included medication, case management, psychotherapy, contact with a psychiatrist and a designated worker, and, in some cases, contact with a social worker or clinical psychologist. ACT plus TAU included the above TAU interventions in addition to ten 60-minute individual sessions once a week led by the lead author, Ross White. Outcome measures collected were Hospital Anxiety and Depression Scale, Positive and Negative Syndrome Scale, Acceptance and Action Questionnaire-II, Kentucky Inventory of Mindfulness Skills, and the Working Alliance Inventory-Short Form Revised. Data were collected at baseline and 3-month follow-up by raters blind to treatment allocation. Fourteen who were allocated to the treatment and 10 to the control completed the study.

Moderate treatment effects were reported on the Positive and Negative Syndrome Scale-negative syndrome subscale [PANSS-negative scale] ( $t_{19} = -2.36$ ;  $p = 0.029$ ;  $d = 0.47$ ) and the Kentucky Inventory of Mindfulness Skills-total [KIMS-total] ( $t_{21} = 2.66$ ;  $p = 0.015$ ;  $d = 0.50$ ). The PANSS measures the symptom severity and two symptom types (positive and negative) of schizophrenia (Kay et al., 1987). The PANSS-negative scale measures the severity of negative symptoms (e.g., blunted affect, emotional withdrawal, social withdrawal, poor rapport) in participants. The results suggested that the active intervention participants showed

fewer negative symptoms. The KIMS-total measures mindfulness skills through 4 domains: observing, describing, acting with awareness, and accepting without judgement (Baer, Smith, & Allen, 2004). The results suggested that the active intervention participants showed greater total mindfulness skills.

### *Similarities Between Studies*

Four studies—Bach and Hayes (2002), Gaudiano and Herbert (2006), Shawyer et al. (2012), and White et al. (2011)—used ACT as the mindfulness-based intervention. The Shawyer et al. (2012) TORCH method was an adaptation of ACT developed specifically for command hallucinations. Two studies—Chadwick et al. (2009) and Langer et al. (2012)—used group-based mindfulness as the mindfulness-based intervention.

Four of the studies also combined results and used secondary analysis to support their hypotheses. After initial analysis, Chadwick et al. (2009) found only moderate treatment effects in three of six measures. However, after both the treatment and control groups received the intervention, secondary analysis of pre- and postscores found significant treatment effects for two of six measures: Clinical Outcomes in Routine Evaluation ( $p = 0.013$ ; 95% CI: 0.08, 0.59) and SMQ ( $p = 0.037$ ; 95% CI: 0.6, 16.0).

After initial analysis, Shawyer et al. (2012) found no significant treatment effects in any of the 12 measures. However, when both intervention groups were combined (TORCH and befriending) and compared to the waiting list, large and moderate treatment effects were found in six scales: confidence in coping with command hallucinations self-report ( $d = 1.07$ ;  $p < 0.01$ ); Positive and Negative Syndrome Scale-negative symptoms ( $d = 0.96$ ;  $p < 0.01$ ); Positive and Negative Syndrome Scale-general ( $d = 0.85$ ;  $p < 0.05$ ); Positive and Negative Syndrome Scale-total ( $d = 1.01$ ;  $p < 0.01$ ); Quality of Life Enjoyment and Satisfaction Questionnaire-general activities ( $d = 0.96$ ;  $p < 0.05$ ); and life satisfaction ( $d = 0.68$ ;  $p < 0.05$ ).

Given similar populations and interventions, Bach et al. (2013) pooled the results of their separate studies: Bach and Hayes (2002) and Gaudiano and Herbert (2006). The combined study confirmed the finding of both previous studies showing that individuals in the ACT intervention stayed out of hospital longer than individuals who did not receive the intervention (104.2 days and 87.7 days, respectively). In addition, they extended the findings to discover that the individuals in the ACT intervention displayed “reduced symptom believability-mediated changes in the symptom distress to rehospitalisation itself” (Bach et al., 2013, p. 7).

Three studies—Chadwick et al. (2009), Langer et al. (2012), and White et al. (2011)—were described as feasibility trials. A feasibility trial is research conducted before the main study to “estimate important parameters that are needed to design the main study” (Arain, Campbell, Cooper, & Lancaster, 2010, p. 67). One trial—Gaudiano and Herbert (2006)—was described as a pilot study. A pilot study is a version of the main study that is conducted on a smaller scale “to test whether the components of the main study can all work together” (Arain et al., 2010, p. 67).

Two studies—Bach and Hayes (2002) and Shawyer et al. (2012)—were described as full randomized controlled trials.

Similar measures were also used throughout several studies. Rehospitalization, symptom distress self-report, and believability self-report were used in both Bach and Hayes (2002) and Gaudiano and Herbert (2006). The SMQ was used in Chadwick et al. (2009) and Langer et al. (2012). The Beliefs About Voices Questionnaire was used in Chadwick et al. (2009) and Shawyer et al. (2012). The Clinical Global Impressions Scale was used in Gaudiano and Herbert (2006) and Langer et al. (2012). The Psychotic Symptom Rating Scale was used in Chadwick et al. (2009) and Shawyer et al. (2012). The Positive and Negative Syndrome Scale was used in Shawyer et al. (2012) and White et al. (2011). There were no similar findings in most of the measures used in multiple studies. However, the SMQ showed a moderate treatment effect in Chadwick et al. (2009) and a large treatment effect in Langer et al. (2012).

#### DISCUSSION

This systematic review looked at the impact of mindfulness-based interventions on symptoms of psychosis. Although a few of the measures across the studies showed treatment effects, the majority of the measures across the studies showed no significant treatment effect. Therefore, studies to date do not indicate that mindfulness-based interventions have an impact on symptoms of psychosis.

In order to provide the strongest analysis possible, this review included only RCTs. This study also used the Critical Appraisal Skills Programme (CASP, 2013) for Randomized Controlled Trials to assist in assessing the validity and quality of each trial. The trials all met important criteria such as addressing a clearly focused issue, random allocation of participants, and accounting for participants at each trial's conclusion. However, not all the trials met criteria such as blinding and experimental and control groups receiving equal treatment. In several trials, control groups were placed on waiting lists. In addition, though all trials included randomization, two trials were not clear as to their methods (Bach & Hayes, 2002; Langer et al., 2012). Concerns also arise from the limited number of studies, their small sample sizes, and the various methods and measures used across trials. Therefore, the classification of evidence from the trials is low due to methodological limitations. This restrains the level of potential inference from the trials. Given the results of this review, there exists the possibility that mindfulness may provide no symptom reduction for the treatment of psychosis, beyond what is provided by treatment as usual.

In addition, it is important to reflect on some key issues underlying the central elements of these trials. Across trials, mindfulness interventions vary greatly. The number of intervention sessions, format (individual versus group), and strategies were quite different. In order to track whether the mindfulness intervention is implemented consistently, there should be a standardized intervention protocol and fidelity assessments. Only then can cross-study comparisons be made, and

the dose-response effects and the active ingredients that lead to change can be better understood.

Also, it is important to consider which outcomes are legitimate evidence of effectiveness. Across trials, mindfulness intervention for psychosis is based on an underlying belief that, in order to be considered effective, the interventions will reduce overall symptomatology. However, mindfulness interventions are designed to help individuals cope with symptoms, not necessarily make them go away. There may be a need to shift how treatment is defined with this intervention. It may be legitimate for individuals to feel more confident about their ability to cope with symptoms of psychosis and to be less reactive to them. Perhaps functional outcomes, not symptom-related outcomes, should be measured.

In conclusion, the purpose of this systematic review was to examine the impact of mindfulness-based interventions on symptoms of psychosis. Though a few of the measures across the studies showed treatment effects, a majority of the measures across the studies showed no significant treatment effect. Therefore, studies to date do not indicate that mindfulness-based interventions have an impact on symptoms of psychosis.

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