An Emotional Regulation Approach to Psychosis Recovery:

The Living Through Psychosis Group Programme

Aisling Ryan[1,2], Edel Crehan[3], Mizanur Khondoker[4], Mary Fell[1,2], Roisin Curtin[3], Louise C Johns[5,6]

1. School of Psychology, Trinity College Dublin, Ireland

2. Health Service Executive, Ireland

3. Department of Psychology, St Patrick's Mental Health Services, Dublin, Ireland

4. Norwich Medical School, University of East Anglia, Norwich, UK

5. Department of Psychiatry, University of Oxford, UK

6. Oxford Health NHS Foundation Trust, Oxford, UK

Corresponding author:

Dr Louise C Johns, Oxford Early Intervention in Psychosis Service, Warneford Hospital, Headington, Oxford. OX3 7JX.

Tel: +44 (0)1865 902724; e-mail: louise.johns@psych.ox.ac.uk

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Abstract

Background and Objectives

Research indicates the value of targeting emotional regulation (ER) skills in psychological interventions for psychosis. These skills can be delivered in a group format, thereby increasing access to therapy. This pilot study examined the acceptability and clinical effects of teaching ER skills in The Living Through Psychosis (LTP) group programme.

Methods

Patients with a psychotic illness were offered the LTP programme, comprising eight sessions over four weeks. Measures were completed by 55 participants. Acceptability was assessed by attendance rates and a group cohesion scale. Measures of intervention targets, recovery and clinical outcomes were completed at baseline, pre-group, post-group, and one-month follow-up.

Results

High group attendance and cohesion support the acceptability of the group. Participants reported less difficulty with ER (Coeff.= -8.29, 95% CI: -13.40 to -3.18, within participant uncontrolled effect size (ES) d=0.29), increased mindful relating to distressing symptoms (Coeff.= 11.20, 95% CI: 7.02 to 15.38, d=0.65), and improvements in recovery dimensions (Coeff. = 10.07, 95% CI: 5.6 to 14.54, d=0.42) from pre- to post-intervention, and maintained at one-month follow-up. Participants' hallucinations and delusions reduced from pre-intervention to follow-up ($t(18)=4.64$, $p<0.001$; $t(18)=5.34$, $p<0.001$). There was no change in fear of relapse.

Limitations

The uncontrolled, pre-post design precluded blinded assessments, and may have inflated effect sizes. Other factors may have contributed to the improvements.

Conclusions

The LTP programme was acceptable to people with psychosis. The preliminary findings indicate the potential utility of teaching ER and mindfulness skills in a brief group programme. Findings require replication in a randomized controlled trial.

Keywords: schizophrenia, emotional regulation, mindfulness, psychosis, recovery

Highlights

- A brief emotional regulation skills group was acceptable for people with psychosis
- There were improvements in targeted psychological processes and clinical outcomes
- Emotion regulation skills can be taught in a group setting for clients with psychosis

1. Introduction

A key development in psychological interventions for psychosis has been the effective application of 'third wave' cognitive behavioural therapies, with a focus on transdiagnostic skills of mindfulness, acceptance and emotional regulation, which aim to alter one's relationship to symptoms (Khoury et al., 2013; Louise et al., 2018; Chadwick, 2019). A meta-analysis of RCTs of mindfulness, acceptance and compassion-based interventions for psychosis demonstrated small to medium effects, similar to cognitive behaviour therapy for psychosis (CBTp) (Louise et al., 2018). These approaches focus on the whole person and their emotional experiences, rather than on symptoms alone, and support the person to establish their identity beyond psychosis and increase their sense of control (Goodliffe et al., 2010). A transdiagnostic approach considers common factors within and across patient populations (Harvey, Watkins, Mansell & Shaffran, 2004) and influences how we intervene by considering shared principles across interventions. One such common factor is the role of emotion in the emergence of psychosis, in the experience of psychosis, and in the help-seeking experience of patients with psychosis (Clamor et al., 2015; Freeman & Garety, 2003; Gumley et al., 2013), suggesting a need for interventions that are trauma-informed and sensitive to service users' emotional needs (Longden et al., 2012; Spauwen et al., 2006; Varese et al., 2012).

Emotion regulation has long been a focus of trauma-informed interventions. For example, ER skills are central to Dialectical Behaviour Therapy (DBT), where recovery involves an equal focus on acceptance and change. ER is defined as a process comprising the monitoring, appraisal and modification of the quality, intensity, and duration of affective states (Thompson, 1994). ER can be conceptualised as a set of regulation strategies, which

include the maladaptive strategies of suppression (Campbell-Sillis et al., 2006) and rumination (Nolen-Hoeksema et al., 2008), and adaptive strategies of cognitive reappraisal (John and Gross, 2004) and acceptance (Berking et al., 2008). Research shows a high prevalence of both suppression and rumination in people with psychosis (Kimhy et al., 2014; O'Driscoll et al., 2014), highlighting the need to focus on the emotional aspects of psychosis (Gumley et al., 2013). Of note, CBTp indicates cognitive reappraisal as a key mechanism of change (Morrison et al., 2012). These ER strategies inform a therapeutic focus on 'change' and 'acceptance' strategies and are key components of evolving cognitive behaviour therapies. Alongside this evolution in CBT practice is the emerging framework of formulating and intervening using trauma informed principles (Varese, Van den Berg, Hardy & Longden, 2017).

Emotional dysregulation is a core feature of psychosis, characterised by high reactivity, threat sensitivity, and difficulty reducing intense emotional reactions. Individuals with psychosis can experience difficulties processing and expressing emotions, exacerbating their distress (Khoury et al., 2015). Difficulty using ER strategies is related to level of psychotic symptom distress (D'Antonio et al., 2015; Lincoln et al., 2015a). Increased use of suppression and more limited use of reappraisal have been indicated among individuals with psychosis (O'Driscoll, et al., 2014) and those at clinical high risk for psychosis (Ludwig, Werner & Lincoln, 2019). Use of suppression is associated with increases in auditory and visual hallucinations (Kimhy et al., 2020) and with increases in paranoia during daily functioning (Nittel et al., 2018). From a theoretical perspective, interventions that target adaptive ER skills would be expected to be of benefit to people with psychosis (Garety et al., 2001).

Emotional regulation (ER) can be taught using skills training. This involves applying cognitive and physiological regulatory strategies to manage the experience and expression of emotion as is appropriate to the situation (Henry et al., 2008). Enhancing ER and mindfulness skills in a targeted intervention contributes to reduced distress, symptomatic and emotional recovery, and increased feelings of self-efficacy in psychosis (Chadwick et al., 2016; Khoury et al., 2013). These factors are crucial in staying well and reducing the risk of relapse following a psychotic episode (Freeman & Garety, 2003; Gumley et al., 2013).

The Living Through Psychosis (LTP) group programme aims to enhance ER and mindfulness skills in order to promote emotional and functional recovery, and to reduce the

participants' fears of relapse of their psychosis. The LTP approach is influenced by concepts of emotional recovery (Gumley & Schwannauer, 2006). The programme is underpinned by the Garety, Kuipers, Fowler, Freeman and Bebbington (2001) model of psychosis, which indicates a role for emotional processes in the formation and maintenance of symptoms, draws on Linehan's (1993) biopsychsocial model of emotional dysregulation, and introduces ER techniques from DBT (Linehan, 1993; 2014). Participants are taught skills to enhance emotional awareness, acceptance, and regulation of physiological responses, impulsive behaviours and emotion-led thinking. We propose that people with psychosis have difficulties regulating emotions because of cognitive and temperamental biases related to their psychosis and to experiences of trauma and/or invalidating environments. ER difficulties can trigger and maintain the symptoms of psychosis and perpetuate the risk of relapse.

This pilot study evaluated the LTP programme. We anticipated that participants would find the intervention acceptable. We predicted improvements following the group in: a) the intervention targets of ER and mindfulness skills; b) clinical outcomes of positive symptoms and fear of recurrence; c) and dimensions of recovery. We also investigated the relationships between changes in ER over the course of the group and clinical outcomes, and whether increased ER and mindfulness skills were associated with a reduction in positive psychotic symptoms.

2. Method

2.1 Participants

The study was conducted in a not-for-profit independent psychiatric hospital accessed by service-users from both urban and rural settings in the Republic of Ireland. The inclusion criteria were: aged 18 or above and with a psychotic disorder diagnosis (schizophrenia, schizoaffective disorder, bipolar affective disorder). Participants continued to access their usual treatment at the hospital, which, for in-patients, included medication, multi-disciplinary team input, psycho-education programmes, and weekly medical reviews. Out-patients attended follow-ups with a consultant psychiatrist every three months.

2.2 Measures

Self-report measures were used to gather demographic and clinical characteristics (age, gender, education level, employment status, diagnosis) and experience of trauma.

Standardised measures were used to assess acceptability and changes in targeted psychological processes, clinical outcomes, and recovery dimensions.

2.2.1 Acceptability

Rates of attendance and perceptions of the group's therapeutic environment, as measured by the Group Climate Scale, were used as indicators of the acceptability of LTP. The Group Climate Scale – Short form (MacKenzie, 1983) is a 12-item scale that consists of three subscales: a) engagement, b) conflict, and c) avoidance. Research shows it is valid and reliable with good internal consistency. Coefficient alphas for the GCQ subscales are reported as (.94, .92, and .88 respectively) (Kivlighan & Goldfine, 1991).

2.2.2. Targeted Psychological Processes

The Difficulties with Emotional Regulation Scale DERS (Gratz & Roemer, 2004) assesses a person's level of difficulty with skills needed for effective ER: a) awareness, b) acceptance, c) ability to control impulsive behaviour, and d) ability to respond to changing situational demands. It is a 36-item scale, with responses ranging from 1 to 5, with a higher total score indicating greater difficulty in ER. The measure has high internal consistency (α = .93) and reliability (α = .92) (Gratz & Roemer, 2004).

The Southampton Mindfulness Questionnaire SMQ (Chadwick et al., 2008) assesses the individual's ability to relate mindfully to distressing thoughts and images. It is a 16-item scale, with responses ranging from 0 to 6, with higher scores reflecting mindful relating. The scale has a good level of internal reliability (α = .85) (Baer et al., 2013).

2.2.3 Clinical Outcomes

The Psychotic Symptom Rating Scales PSYRATS (Haddock et al., 1999) is a multidimensional structured interview measure of voices (11 items) and delusions (6 items) experienced during the past month. Item responses range from 0 to 4, with higher scores reflecting greater severity. Separate scores are obtained for voices (0-44) and delusions (0-24). High inter-rater reliability was reported in the original study (Haddock et al., 1999).

The Fear of Recurrence Scale FORSE (Gumley & Schwannauer, 2006) assesses fear of relapse, intrusiveness and awareness of symptoms. It is a 23-item Likert scale, with responses ranging 1 to 4, with higher scores indicating greater fear of relapse. Research shows good to excellent internal consistency (α range = .85–.92). (Gumley et al., 2015).

2.2.4 Recovery

The Recovery Assessment Scale RAS (Giffort et al., 1995) assesses aspects of recovery such as personal confidence and hope, willingness to ask for help, goal and success orientation, reliance on others, and feeling one's behaviour is not dominated by psychotic symptoms. It is a 41-item scale, with responses ranging from 1 to 5, with higher scores indicating increased recovery. Research shows it is valid and reliable with good internal consistency of (α =0.93) (Salzer & Brusilovskiy, 2014).

2.3 Procedure

Ethical approval was granted by the St. Patrick's University Hospital Research Ethics Committee and Trinity College Dublin, School of Psychology Research Ethics Committee. All participants gave written informed consent prior to taking part. Group participants were informed that not participating in the research study would not affect the usual service they received. Measures of intervention targets and recovery were completed at four time-points (baseline, pre-group, post-group, and one-month follow-up). Measures of clinical outcomes were completed at two time-points (pre-group and one-month follow-up). The Group Climate Scale was completed at one time-point (post-group). An assistant psychologist administered the self-report measures.

2.3.1 Living Through Psychosis (LTP) Intervention protocol

The LTP group programme aimed to support participants to increase their understanding of psychosis, to identify personal triggers for symptoms and distress, and to integrate emotion regulation strategies into their coping repertoires. The emotional regulation strategies targeted in the LTP programme included: increased emotional awareness, emotional acceptance, cognitive regulation through reappraisal of whether emotion is driving thought processes, and regulation of physiological responses and impulsive behaviours. The programme comprised of eight sessions over four weeks. The initial session was five hours and subsequent sessions lasted three hours (including breaks). A senior clinical psychologist (author of LTP) and counselling psychologist facilitated the sessions, both of whom had clinical experience and training in CBTp and DBT. The assistant psychologist also helped to co-facilitate the programme. The LTP protocol drew upon conceptualisations of psychosis from the Garety et al. (2001) model of positive symptoms, Gumley's (2010) work on emotional distress in psychosis, and the concept of a continuum of psychosis and recovery (Van Os et al., 2009). The participant worksheet manual was informed by DBT ER techniques (Linehan, 1993),

Structured Psychotherapy for Adolescents Responding to Chronic Stress programme (Ford, 2015) and mindfulness for psychosis programme (Chadwick et al., 2005).

The initial session focused on normalising symptoms, reflecting on the consequences of the symptoms of psychosis in their lives, and establishing a personalised formulation. Participants were introduced to the Garety et al. (2001) model of psychosis and invited to develop a personal formulation by using worksheets that list common pre-disposing factors, triggers and signs of relapse. Discussions were supported by showing video interviews of individuals who had found ways to cope with their symptoms, and informational videos such as "what is psychosis" and "5 phases of psychosis" https://www.youtube.com/watch?v=gy6zcbR5xXw and https://www.youtube.com/watch?v=DdiPK3-K5is.

Each subsequent session focused on a particular ER skill (see Table 1). Breathing and mindfulness exercises were practised at each session. Group discussion and interactive exercises were used to promote learning during the sessions. Participants were given between-session exercises and there was positive reinforcement of skills practice by peers and facilitators, plus an opportunity to work together to problem-solve obstacles to skills practice. Participants also developed coping plans in session and were provided with visual prompts such as wallet cards and worksheets to support memory and promote the use of ER strategies daily.

Session 1- Personal formulation & S.O.S	Participants are provided with psychoeducation about models of psychosis and psychosis recovery and invited to generate a personal formulation. The foundational skill of S.O.S encourages participants to Slow down, Orientate oneself to the immediate environment and psychological state, and Self-check by rating level of distress.
Session 2- Mindfulness	Mindfulness 1 – participants are taught to extend the skill of "self-check" by learning to observe and describe their thoughts. Drawing on Chadwick's work, we show how the mind can suppress or ruminate on thoughts. We aim to achieve a middle ground where thoughts are observed and described. Taking the observer role increases participants' awareness of how they respond to experiences and to notice when thought processes have begun to become disordered. The observer role enables perception of oneself as separate from thoughts. The aim of the skill is to increase self-efficacy by building awareness of how one responds to experiences, so we are then in a position to make choices about how to respond.
Session 3- Mindfulness	Mindfulness 2 – participants complete experiential exercises to increase active participation in the moment with full attention. This skill helps to

	address the experience of anhedonia and avolition reported by people with psychosis by encouraging full attention and mindful physical activity.
Session 4- Wise Mind	Introduces the idea of cognitive regulation as an emotional regulation strategy. The mind states of emotion mind, reason mind and wise mind support participants to recognise when thoughts are being driven by extreme emotion and have become detached from reality. In emotion mind, actions are driven by emotional interpretations of events, and in reason mind, thoughts and actions are driven by logic and facts. The skill of wise mind is learning to validate the emotion and combine it with reason in order to choose the best course of action. This differs from cognitive restructuring or meta-cognitive therapy techniques as participants are not explicitly taught to criticize the evidence for and against their hypothesis or to generate further hypotheses. Participants are asked only to consider the influence of emotion on thinking, to validate the emotion and to integrate reason in order to form a more balanced "wise" response. Participants engage in role play personifying the identity of emotion mind, reason mind and wise mind. The group of participants support the personified "mind states" to come to a "wise" conclusion.
Session 5- Labeling Emotions	To address the common experience of alexithymia in presentations of psychosis, participants are explicitly taught the skill of labeling their emotions. The origin and purpose of emotions for humans is explored. Each emotion is broken down into five constituent parts: Trigger, Thoughts/interpretation, Physiological changes, and Action urge. This format supports the participant to notice and identify the constituent part they are experiencing e.g. physiological reaction, action urge etc. They can then use this information to explore the other parts before drawing conclusions and labeling the emotion they are experiencing. A further progression of the labeling skill is building awareness of situations that triggered initial physiological responses and/or the interpretation/thought they had regarding the situation and how this related to their urge to act.
Session 6- Opposite Actions	Building upon the skill of identifying the emotion experienced and the action urge it triggers is the skill of choosing to act opposite to the action urge. Opposite action provides participants with the option of acting in line with emotion action urges or choosing to act opposite the emotion urge when 'acting opposite' is in-line with their personal goals e.g. facing the situation they are feeling suspicious about rather than avoiding the situation.
Session 7- Radical Acceptance	Supports participants to identify when they are 'fighting the reality' of their situation, for example, denying a diagnosis, ignoring unhealthy interpersonal dynamics, or when they are catastrophising and feeling hopeless about change. It introduces the concept that by accepting things as they are in the current moment rather than fighting or denying the reality of the situation, participants will be more flexible in their thinking and more effective in obtaining their personal recovery goals. We examine the costs of fighting reality and introduce the idea of 'letting go' of certain thoughts or beliefs and to begin to feel what this is like. The principle applies that we 'fight reality' when there is unbearable distress. Much

	validation is used throughout, but in particular with this skill.
Session 8- Cope Ahead	Acknowledges the human capacity to imagine anxiety provoking events before they have happened and encourages participants to draw on skills learned in the programme to imagine coping more effectively. Participants are supported to generate an individualised sustainable relapse prevention plan which is influenced by the Gumley work on fear of relapse and the five phases of psychosis work from Van Os.

Table 1: Living Through Psychosis Skills

3. Analysis

Only participants who attended four sessions or more (a "dose") of the programme were included in the outcome analyses. To reduce possible bias due to missing questionnaire data at any time point, the available outcome data were analysed in Stata using a mixed model via the maximum likelihood method. There were no observed predictors of missingness in our data and the missingness mechanism is most likely to be ignorable (missing at random or missing completely at random). Under the ignorable missing data mechanism, maximum likelihood estimates based on available (observed) data provide the correct estimate (Rubin, 1976).

Changes in psychological processes (ER and mindfulness), clinical outcomes (fear of recurrence and positive psychotic symptoms), and recovery dimensions were estimated using four separate linear mixed models, with each outcome measured at four time points: baseline no intervention (T1), pre-intervention (T2), post-intervention (T3) and follow-up (T4). Time was considered as three-category (T2, T3 and T4) fixed variable, controlling for the change between T1 and T2, with random clustering effects for treatment group (Group 1 through 10) and participant ID. The mixed model analyses included random intercepts, and effect sizes were calculated using the Stata command 'cohend'. Associations between pre-post changes in intervention targets and clinical and recovery outcomes were explored using Pearson correlations and regression models. The regressions calculated whether ER and mindfulness were each associated with the outcomes while controlling for the other.

4. Results

4.1 Demographics

Figure 1 illustrates the stages of recruitment. There were ten cohorts of participants who attended the programme over the course of a year. Sixty-four participants began the programme, four (6.25%) of these dropped out, and five (7.8%) were discharged from the hospital to locations too far away to travel to the hospital. Fifty-five (85.9%) participants completed the measures and attended four or more LTP sessions. Demographic and clinical characteristics of the 55 completers are shown in Table 2.

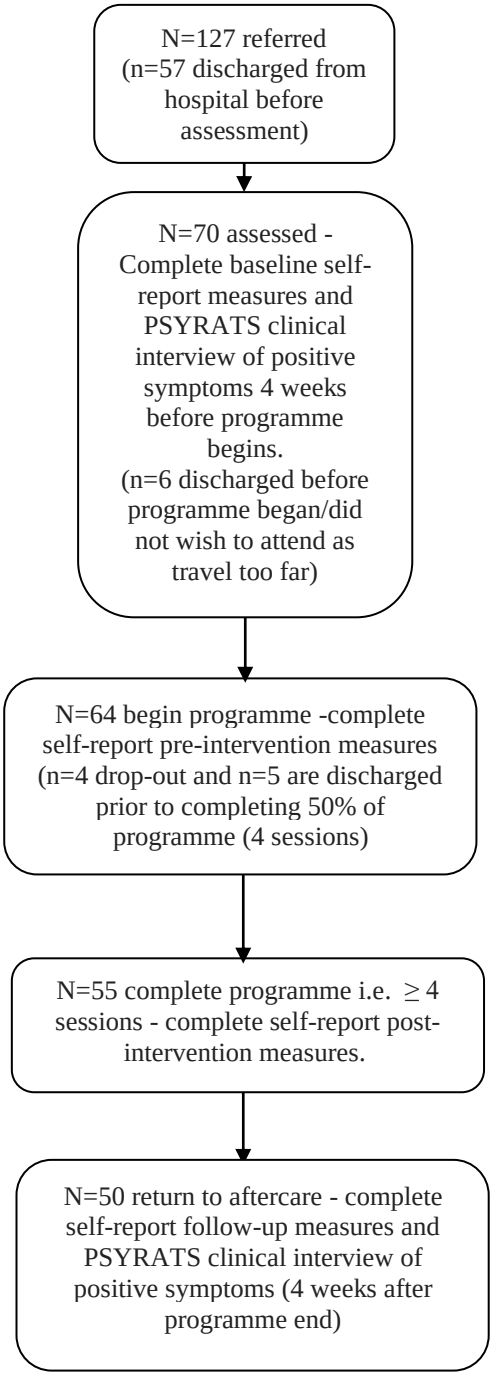

Figure 1: Flowchart of participants' involvement in the LTP programme and research study.

Variable	Mean (SD)
Age (range 20-69)	36.04 (12.78)
Number of group sessions attended (range 4-8)	6.93 (1.9)

Variable	Frequency n (%)
Gender	
Female	22(40%)
Male	33(60%)
Clinical Diagnosis	
Schizophrenia	20(36.36%)
Schizoaffective disorder	11(20%)
Bipolar affective disorder	11(20%)
Acute Psychotic Episode	9(16.36%)
Psychosis (Dx not specified by participant)	2(3.64%)
Puerperal psychosis	1(1.82%)
Delusional disorder	1(1.82%)
First Episode of Psychosis	
Yes	18(32.7%)
No	37(67.3%)
Experience of Trauma	
Yes	39(71%)
No	11(20%)
No comment	5(9%)
Education Status	
Junior Cert	4(7.3%)
Leaving Cert	11(20%)
Apprenticeship	8(14.5%)
Undergraduate	21(38.2%)
Postgraduate	11(20%)
Employment Status	
Employed	22(40%)
Unemployed	25(45.5%)
Student	8(14.5%)
Status at point of referral	
In-patient	35(63.6%)
Out-patient	20(36.4%)

Table 2: Demographic and clinical characteristics of the final sample (n=55)

4.2 Acceptability

Sixty percent (33) of the 55 completers attended all eight sessions, 23.6% (13) attended seven, 7.3% (4) attended six, 5.5% (3) attended five and 3.6% (2) attended four. Ninety-one percent (50) attended a one-month follow-up session after the group had ended. High levels of attendance and low levels of attrition suggest the programme was acceptable to participants. Scores on the subscales of the Group Climate Scale indicated that participants

felt engaged in the programme: engaged M=15.29 (SD=3.12), conflict M=1.42 (SD=1.89) and avoiding M=5.69 (SD=2.10).

4.3 Intervention Targets

Processes targeted by the intervention were ER and mindfulness skills. On the Difficulties with Emotional Regulation Scale (DERS), there was a significant reduction from pre- to post-intervention (Coeff.= -8.29,p=0.001, 95% CI: -13.40 to -3.18, ES = 0.29) and from pre-intervention to follow-up (Coeff.=-13.08, p<0.001, 95% CI: -18.34 to -7.98, ES = 0.46). There was also a significant increase in scores on the Southampton Mindfulness Scale (SMQ) from pre- to post-intervention (Coeff.= 11.20, p<0.001, 95% CI: 7.02 to 15.38, ES = 0.65) and from pre-intervention to follow-up SMQ (Coeff.=12.95, p<0.001, 95% CI: 8.67-17.23, ES = 0.67).

4.4 Clinical Outcomes

There was a significant reduction in hallucination severity (t(18)=4.64, p<0.001) and distress (t(18)=5.34, p<0.001), and in delusional severity (t(36)=7.19, p<0.001) and distress (t(37)=8.1, p<0.001), from pre-intervention to follow-up. There was no change in score on the fear of recurrence scale (FORSE) following the intervention (pre-post: Coeff.=-0.79, p=0.661; pre-follow-up: Coeff.=-2.84, p=0.122).

4.5 Recovery Outcomes

There was a significant improvement on the recovery assessment scale (RAS) from both pre- to post-intervention (Coeff.=10.07, p<0.001, 95% CI: 5.60 to14.54, ES = 0.42) and pre-intervention to follow-up (Coeff.=8.24, z=3.52, p<0.001, 95% CI: 3.65 to12.82, ES = 0.11).

Table 3 shows the mean scores on the measures at each assessment.

Measure (min-max score)	T(1) M (SD)	T(2) M (SD)	T(3) M (SD)	T(4) M (SD)
Difficulties with Emotional Regulation (DERS) (36-180)	97.6 (23.3)	98.4 (21.4)	92.3 (21.8)	87.9 (24.4)
Mindfulness (SMQ) (0-96)	38.3 (15.4)	38.0 (15.4)	47.6 (14.6)	48.4 (16.1)
Fear of Recurrence (FORSE) (23-92)	51.4 (12.4)	52.4 (14.4)	51.9 (11.6)	49.0 (11.4)
Recovery (RAS) (41-205)	145.2 (23.8)	145.6 (19.2)	153.9 (20.7)	151.7 (21.7)
PSYRATS Hallucinations (0-44)	27.7 (6.1)	N/A	N/A	14.5 (12.3)
Hallucination distress (0-8)	5.7 (2.3)			2.8 (2.6)
PSYRATS Delusions (0-24)	18.7 (3.7)	N/A	N/A	11.3 (6.1)
Delusional distress (0-8)	6.4 (1.2)			3.5 (2.0)

Table 3: Group mean scores (standard deviation) on the measures of targeted processes, clinical and recovery outcomes at baseline (T1), pre-treatment (T2), post-treatment (T3), and one-month follow-up (T4).

4.6 Associations

Table 4 shows correlations between changes in scores on the measures of intervention targets and outcomes from T2-T4. In the regression analyses, improved emotional regulation from pre- to post-intervention was associated with increased recovery levels post-intervention ($F(2,50) = 30.72$, $p<0.001$, $R^2 = .551$, R^2 adjusted=.533) and at follow-up ($F(2,46) = 22.50$, $p<0.001$, $R^2 = .495$, R^2 adjusted=.473). Increased mindfulness from pre to post-intervention was associated with greater recovery at post-intervention ($F(2,50) = 28.50$, $p<0.001$, $R^2 = .532$, R^2 adjusted=.514) and follow-up ($F(2,46) = 25.31$, $p<0.001$, $R^2 = .524$, R^2 adjusted=.503). Increase in mindfulness following the intervention predicted reduced hallucination severity ($F(2,16) = 8.50$, $p=0.003$, $R^2 = .515$, R^2 adjusted=.455) and distress

($F(2,16) = 7.92$, $p=0.004$, $R^2 = .497$, R^2 adjusted=.435) at follow-up, but there was no significant impact on delusions.

	Difficulties with Emotional Regulation (DERS)	Mindfulness (SMQ)	Fear of Recurrence (FORSE)	Recovery (RAS)	Hallucination Total (Psyrats)	Hallucination Distress (Psyrats)	Delusion Total (Psyrats)	Delusion Distress (Psyrats)
Difficulties with ER (DERS)	1.000			-0.403** (p=0.004)	.167	-0.039	0.407* (p=0.014)	0.475** (p=0.003)
Mindfulness (SMQ)		1.000			-0.537* (p=0.018)	-0.3062	-0.414* (p=0.012)	-0.419** (p=0.01)
Fear of Recurrence (FORSE)			1.000		0.095	0.028	0.199	0.229
Recovery (RAS)				1.000	-0.2036	-0.1250	-0.1799	-0.200
Psyrats Hallucinations Total					1.000	0.893** (p<0.001)	0.632* (p=0.012)	0.660* * (p=0.007)
Psyrats Hallucination Distress						1.000	0.660** (p=0.007)	0.652** (p=0.009)
Psyrats Delusion Total							1.000	0.878** (p<0.001)
Psyrats Delusion Distress								1.000

Table 4: Correlations between changes in scores on the measures from T2-T4. *p<0.05, **p=<0.01

5. Discussion

We piloted a group intervention targeting emotion regulation (ER) for people with psychosis. We anticipated that participants would find the group acceptable, and predicted improvements in ER and mindfulness skills, and outcomes of positive symptoms, recovery, and fear of recurrence. We also examined whether changes in ER and mindfulness were associated with clinical and recovery outcomes.

Good attendance over the eight sessions and at the follow-up session indicates that participants found the intervention acceptable. Responses on the group cohesion measure showed that participants were engaged in the intervention. The client group was mixed in

age, gender, employment status and length of illness, and all attendees had complex psychological difficulties, indicating the potential to run the LTP programme in other clinical settings.

There were significant changes in the psychological processes targeted by the LTP programme: ER difficulties reduced and mindfulness skills increased following the group, both of which were sustained at follow-up. The results tentatively suggest that participants applied acceptance, emotional labelling and mindfulness skills in a more effective manner over the course of the programme and experienced a sustained reduction in difficulties with ER after finishing the programme. The pre - follow-up changes in ER and mindfulness are comparable with those reported in a similar pilot study teaching these skills in an early psychosis service (Khoury et al., 2015). Our uncontrolled effect sizes cannot be compared directly with between-group RCT or meta-analytic effects of mindfulness-based interventions for psychosis.

Participants reported a reduction in positive symptoms of hallucinations and delusions at follow-up, which could suggest that participants benefitted from applying ER and mindfulness strategies to manage symptoms. This would be consistent with previous research indicating that the implementation of regulatory strategies moderates levels of distress and psychotic symptoms (Lincoln et al., 2015b). Specifically, improvement in mindfulness skills was associated with a reduction in hallucination severity and distress. It is possible that these skills helped participants to take an observer perspective rather than be consumed by internal experiences. Contrary to our prediction, participants' fear of relapse did not reduce. This may be due to the assessment being conducted at one-month follow-up, and the need for participants to experience consistent longer-term change before fear of relapse reduces.

Participants reported increases in the recovery dimensions of hope, confidence and goal directedness following the group. These findings suggest that the group may enhance participants' ability to regulate their emotional and behavioural responses in order to reach personal goals. Thus, the LTP aim of supporting individuals towards emotional and functional recovery through the practice of ER skills was an appropriate aim. It is consistent with previous observations that perceptions of personal control over distress and symptoms of psychosis influence an individual's coping style (Gumley et al., 2013).

5.1 Limitations

The uncontrolled design means that the clinical improvements may have been attributable to other factors, such as inpatient care, concurrent treatments, or non-specific group intervention effects. The assistant psychologist who administered the measures was also involved in facilitating the group, which may have introduced positive bias. The sample comprised participants with non-affective and affective psychosis, and it is possible that ER difficulties are different in the two groups; the small numbers precluded additional analyses comparing these subgroups. The PSYRATS was only administered at two time-points to minimise patient burden, which limits the conclusions about the effects of ER and mindfulness skills on clinical symptoms. A fuller investigation of mechanisms of change requires multiple assessment time-points and a controlled design. This study only measured changes up to one-month after the intervention, and a longer-term follow-up would provide information on the durability of change and any further gains.

5.2 Conclusions

This pilot study shows the potential for a group programme specifically teaching strategies to enhance emotion regulation (ER), to improve clinical and recovery outcomes, in service users with psychosis. Participants demonstrated greater emotional regulation skills following the group, which is consistent with the theoretical basis of the intervention. Furthermore, the focus on emotional experience offered an intervention approach that was responsive to the distress and trauma experienced by those with psychosis, and offered skills to enhance feelings of self-efficacy and recovery. The preliminary findings suggest that treatment gains in ER and mindfulness might be achieved and maintained following a brief skills-based group programme. A pilot randomised control trial is the next step to establish the efficacy of the LTP programme.

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Declarations

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