The Cognitive Behaviour Therapist (2016), vol. 9, e31, page 1 of 16
doi:10.1017/S1754470X16000179

PRACTICE ARTICLE

Group cognitive behaviour therapy combining early intervention with an exclusive focus on single medication-resistant delusional beliefs: a service evaluation

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Received 5 April 2016; Accepted 14 September 2016

Abstract. Cognitive behaviour therapy (CBT) is now the psychological treatment of choice for psychosis but meta-analyses indicate a low effect size on delusions, so further innovations are clearly needed, and group CBT for psychosis (GCBTp) is an under-researched area. This study aimed to service-evaluate the feasibility, satisfaction, safety, and effectiveness of a CBT group specifically targeting medication-resistant single delusions in early psychosis patients (EI-GCBTp). Three separate EI-GCBTp groups were run resulting in a total of 11 medication-resistant early psychosis patients. A within-subjects design tested for group change across two time points: pre-baseline (4 weeks before treatment) to baseline (session 1 of treatment) and sessions 1–8 (the treatment period). Thirteen delusion dimensions were measured from three psychosis-specific questionnaires: The Psychotic Symptom Rating Scale (PSYRATS), Characteristics of Delusion Rating Scale, and the Belief Rating Scale. At least three patients attended each group, satisfaction scores were high, and no harm to patients was identified. With reference to effectiveness, the pre-baseline period showed virtually no change. In contrast, across the EI-GCBTp treatment period, the PSYRATS total demonstrated a statistically significant decrease in delusional severity ($p < 0.01$), a 31% symptom reduction, and a large effect size (Cohen's $d = 1.2$, 95% confidence interval $= -2.53$ to 0.05), statistically significant across four delusion dimensions. EI-GCBTp appears feasible, acceptable, safe, and preliminary uncontrolled effectiveness results suggest merit for larger-scale more rigorous testing of this treatment format for possible dimensional improvements of persistent delusions.

Key words: Delusions, early intervention in psychosis, group cognitive behaviour therapy

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Introduction

Cognitive behaviour therapy (CBT) typically has only a small effect size on delusions, be it in individual format, e.g. 0.36 (van der Gaag *et al.* 2014) or group format for positive symptoms, e.g. 0.38 (Wykes *et al.* 2008), so further treatment innovations may enhance theory and practice (Garety & Freeman, 2013). A combination of early intervention (Jackson & Birchwood, 1996) and a group CBT format (EI-GCBTp) is speculated to be of greater benefit than individual CBT due to the group therapeutic processes such as increased normalization, de-stigmatization, shared learning, and peer encouragement to complete between-session tasks (Saska *et al.* 2009).

Two EI-GCBTp controlled studies (one randomized, one quasi, total $n = 149$) targeted a wide range of psychotic symptoms and found total-score positive symptom reductions, but failed to examine delusions in particular (Lecompte *et al*. 2008; Gaynor *et al.* 2011). However, two other small uncontrolled EI-GCBTp studies (total $n = 29$) examined delusions in addition to a total positive symptoms score and found reductions in delusional severity (Lecompte *et al.* 2003; Chung *et al.* 2013). Moreover, in samples of chronic psychosis patients, two small GCBTp studies have specifically targeted delusions and found reductions in delusion severity [total $n = 17$: Landa *et al.* 2006, uncontrolled trial; Levine *et al.* 1998, randomized control trial (RCT)]. However, an RCT examining a specific reasoning bias intervention failed to find statistically significant improvements in delusional severity ($n = 154$, van Oosterhout *et al.* 2014). Despite this, overall, these studies highlight potential benefits of GCBTp for psychosis patients.

Crucially, no GCBTp study to date has yet employed a delusion-specific approach for patients presenting with early psychosis. The lack of evidence to date for a delusion-specific EI-GCBTp approach may reflect the challenges inherently linked to engaging this clinical group. For example, patients' current symptomatology such as suspiciousness may impact on the patients' ability to trust other members of a group, while negative symptoms may affect their motivation to attend.

Suggestions for improving evaluation of GCBTp

A delusion-specific approach may enhance group cohesion and normalization and may also yield greater effect sizes compared to the examination of a total positive symptom score (Turner *et al.* 2014, p. 12). Thus far, no study has included a pre-baseline design, a feature which can further elucidate whether the introduction of an EI-GCBTp intervention exerts any beneficial effects. Further, to date no delusion assessments have been made *during* EI-GCBTp therapy (Lecompte *et al.* 2003, 2008; Gaynor *et al.* 2011; Chung *et al.* 2013), nor in the key delusion-focused studies in chronic psychosis (Levine *et al.* 1998; Landa *et al.* 2006; van Oosterhout *et al.* 2014). This lack of assessment during therapy obscures the examination of possible symptom-fluctuation treatment effects between pre- and post-assessments and so the speed and duration of any treatment effects is unknown. Multi-dimensional assessments of delusions have also been lacking (carried out by only one study to date: Chung *et al.* 2013), which would potentially highlight which particular delusional dimensions might be amenable to GCBT interventions. Moreover, a 'positive symptoms' score has typically been presented (only Lecompte *et al.* 2003 and Chung *et al.* 2013 present a separate delusion score, but then only one or two dimensions), which again potentially obscures delusion-specific changes.

https://doi.org/10.1017/S1754470X16000179 Published online by Cambridge University Press

In summary, these studies' lack of comprehensive and detailed measurement of the possible effects of EI-GCBTp on dimensional delusion change means that we still do not know how fast, durable or specific any treatment effects actually are.

It has also meant that it has not been possible to relate psychosis symptom changes to the timing of any particular CBT intervention strategy (Pfammatter *et al.* 2006, p. S74), which would provide an evidence base for specific CBT methods.

EI-GCBTp studies have also not yet harnessed a wider range of contemporary CBT targets and methods (e.g. meta-cognitive techniques, sleep, worry, etc.; Garety & Freeman, 2013; Steel, 2013) into a single GCBTp specifically on delusions. Moreover, the actual number of patients who improved is unreported, and untried is a briefer approach without simultaneous individual CBT (as in Levine *et al.* 1998 and Landa *et al.* 2006).

Medication-resistant delusions are a common problem in early course psychosis (Leucht *et al.* 2009), yet are typically rejected from RCTs (e.g. Lincoln *et al.* 2012, p. 682) and when included they respond less favourably to CBT (van der Gaag *et al.* 2014). Medication-resistant delusions therefore represent one important type of stringent test of EI-GCBTp treatment. Therefore our aim in the present service evaluation was to complement existing G-CBTp studies by examining if the combination of early intervention *plus* an exclusive focus on single delusional beliefs, is feasible, acceptable, safe, and is capable of achieving an appreciable effect size. We included methodological improvements in the comprehensiveness, timing, and frequency of delusion measurement in order to find out the speed and stability of any delusion changes during EI-GCBTp treatment. If sufficient numbers of patients with medication-resistant delusions can be engaged and benefit from EI-GCBTp, this might suggest a valuable additional CBT intervention for Early Intervention in Psychosis services.

Method

Setting

The EI-GCBTp groups took place in an Early Intervention in Psychosis service which accepts cases of first-episode psychosis where the duration of untreated psychosis (DUP) is less than 12 months. The service includes care coordination, medication, activity coordinator, employment specialist, and individual CBT. The NHS Trust Research and Development Department classified our work as a service evaluation but stated that informed consent to publish was required, and this was completed on standard Trust forms.

Service evaluation design

This service evaluation employed a within-patient repeated-measures design testing for change in a 4-week pre-baseline-to-baseline treatment-as-usual (TAU) period; and then change during an 8-week, sessions 1–8 treatment period. Three separate EI-GCBTp groups of eight sessions each were run, each set of eight sessions comprised a *different* cohort of patients. All groups ran weekly for eight sessions except for group 1 (session 6), which was postponed to the following week, as was session 4 of group 3, both due to patients' physical illnesses. All delusion measures were completed at nine time-points: pre-baseline, session 1, and then for seven further weeks until session 8.

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Participants

The inclusion criteria was the presence of at least one persistent delusional belief for at least 6 months scoring at least 2 on the Present State Examination (WHO, 1992). All participants had been assessed by a psychiatrist as having psychosis and a delusion. Patients could be either medication-resistant or have refused medication; however, all patients in the outcome analysis were medication-resistant. Medication resistance was defined as the presence of the chosen delusion despite antipsychotic medication for at least 2 months, as judged using patients' health records and interviewing them, with current severity obtained face-to-face using the Psychotic Symptom Rating Scale (PSYRATS) – delusion dimension (Haddock *et al*. 1999).

Eighteen patients initially attended an eligibility screening assessment to check delusion presence and severity (see Measures section below), and a total of 11 patients went on to attend at least 50% (4/8) of the therapy sessions, and provide outcome data with permission to publish; these 11 were included in the analysis. Of the seven patients not included in the effectiveness analysis, one patient attended the screening assessment but never attended the group (group 2); one patient did attend 50% (4/8) of the therapy sessions but was not available to provide outcome data (group 3); two patients refused consent to publish (group 3); and three patients (3/18, 16%) dropped out after commencing therapy (i.e. attended the group at least once but less than four sessions, two from group 1 and one from group 2).

DUP was calculated from the date of the onset of the first psychotic episode until the commencement date of antipsychotic medication. Two patients had previously received some brief individual CBT sessions which included their delusion and four other patients were currently in individual CBT for other non-delusion specific difficulties.

Measures

Feasibility. Feasibility was measured by counting the number of patients who attended each group.

Satisfaction. Satisfaction was measured by 10 questions covering the domains of Knowledge, Effectiveness and Overall Satisfaction (Table 3), all scored on a 5-point range (1, strongly agree; 2, slightly agree; 3, unsure; 4, slightly disagree; 5, strongly disagree). Plus a qualitative section asking what was helpful and what the patient did not like.

Safety. Safety was monitored by asking patients directly plus weekly monitoring of their delusion dimensions, and regularly liaising with relevant clinical staff.

Effectiveness. All six delusion items from the PSYRATS were included. The PSYRATS scores symptoms on a scale of 0–4 and has good retest reliability and validity at first-episode psychosis (Drake *et al.* 2007). Four items from the Characteristics of Delusion Rating Scale (CDRS; Garety & Hemsley, 1987) were included. Selected items were dropped to avoid repetition with the PSYRATS. The CDRS has good retest reliability and validity (Gentner *et al.* 2010). Items included were 'Resistance', 'Dissmissibility', 'Absurdity' and 'Pervasiveness'. Three items from the Belief Rating Scale (BRS; Jones & Watson, 1997) were included: 'Influence on Behaviour', 'Influence on Thinking' and 'Importance of Belief'. Remaining items were dropped to avoid repetition with the PSYRATS and CDRS. The BRS has good reliability and validity (Forgacova, 2008). The original BRS questionnaire used a 5-point scale, but a 10-point scale was used in this service evaluation for consistency with the CDRS items, which allowed for greater sensitivity to change. All original wordings of the two

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end-dimensional anchor points were retained for the CDRS and BRS. Delusion assessments took place individually before each session, except the final assessment which took place as a group immediately after session 8 (or individually soon after if the patient did not attend session 8).

EI-GCBTp intervention

Group name. The group was known as the 'Distressing Beliefs Group' and was devised by the clinical psychologist who is an accredited cognitive therapist and supervisor (BABCP).

Therapists. The three cohorts of EI-GCBTp groups were all run by the clinical psychologist with help from assistant or trainee clinical psychologists.

Belief assessment. Data were collected by the therapists. The first three patients in group 1 were collected by the clinical psychologist and thereafter data for the other nine includable patients were collected by assistant psychologists and trainee clinical psychologists. Along with a staff member at the pre-baseline assessment session, each patient chose a specific delusional belief they wanted to address.

Group structure. The group structure followed standard CBT (Bieling *et al.* 2006). Importantly, at the start of every session, each patient would verbally state the exact wording of their delusion for the whole group to hear and patients were encouraged to use Guided Discovery and Socratic questioning among themselves in a compassionate way. A variety of worksheets were used by patients to evaluate their delusion and its bio-psychosocial context. Homework was set every week.

Group CBT methods and therapeutic targets. Table 1 summarizes the intervention content. The group CBT methods and therapeutic targets were informed by theoretical models and reviews of delusions (e.g. Garety and Freeman, 2013), and their CBT treatment (e.g. Steel, 2013).

Analysis

Sample characterization. The sample was characterized demographically and clinically and their delusions classified by ICD-10.

Feasibility. Feasibility was analysed by calculating if every group session had an attendance of at least three patients.

Acceptability. Satisfaction was calculated using means and standard deviations. Also using the number of patients who dropped out, and recording of qualitative comments.

Safety. Relevant clinicians and the patients themselves were asked weekly about any serious untoward incidents and delusion score deterioration.

Effectiveness. Cohen's d was used to estimate overall effect size of the PSYRATS total [$\text{mean}_1 - \text{mean}_2$/baseline S.D., since Grissom & Kim (2011) recommends that the baseline S.D. is a more valid denominator than a pooled baseline-including outcome denominator]. Mean scores were calculated for the three time-points of the pre-baseline assessment, sessions 1 and 8, for the PSYRATS total and six PSYRATS individual dimensions, and the CDRS and BRS dimensions. Wilcoxon signed ranks tests were used to test for within-patient differences across TAU and also across the treatment period. Any statistically significant results were explored for clinical significance using the criteria that at least half the patients changed (increased/decreased) at least 25% (Leucht *et al.* 2006; Morrison *et al.* 2014).

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Table 1. *Session content key points for early intervention group CBT solely for single delusional beliefs*

Session 1
Aims of the group. Introductions/ice-breaker exercise. Ground rules. Potential benefits of the group (motivational-enhancement). Normalization. De-stigmatization. Hopes and fears for the group. Bio-psychosocial education about psychosis and cognition/emotion. Sharing and exploring the belief with the group including what aspect(s) cause distress.
Session 2
Overview of biological influences on the belief (e.g. cannabis, sleep); social influences on the belief (e.g. criticism, isolation); psychological influences on the belief (e.g. emotion, meta-cognitive beliefs, worry, reasoning biases, coping). Belief identification methods to pinpoint cognitive causes of distress (e.g. affect shifts, recounting specific incidents).
Session 3
Deciding which biological and social influences on the belief to change. ABC to pinpoint beliefs that contribute to distress. Group-guided discovery for each group member's belief.
Session 4
Cognitive belief evaluation methods, e.g. pros and cons of dwelling on the delusion.
Session 5
Evidence the belief is/is not correct, e.g. testing the belief with behavioural experiments, e.g. locations to test if the bullies really will attack, or how to test if the perceived persecutor really is a magical witch. Alternative, realistic, incompatible, and compassionate beliefs.
Session 6
Re-evaluating anomalous experiences, reasoning biases, attentional deployments. Coping strategies, including meta-cognitive, acceptance coping, compassion, strengths, pursuing valued goals, and hope.
Session 7
Collation of bio-psycho-social strategy changes onto individualized therapy blueprint.
Session 8
Action the plan and overcoming barriers. Ending issues.

Delusion dimensions. The delusion dimensions were graphically charted to identify if any dimensions changed during treatment, and if so, by how much, when, and for how long.

Results

Sample characterization (n = 11)

Demographics. Patients' mean age was 21 years (S.D. = 2.04, range = 19-25). Five were female (45.5%), seven were white British (63.6%), three were black British-African (27.3%), and one was Asian British (9.1%). All three drop-outs (attended only 1–3 times) were males, whereas 45.5% (5/11) of those with an outcome analysed were female.

Illness-related. Diagnostically, nine patients had a schizophrenia spectrum disorder, one was acute and transient psychosis, and one was bipolar with psychotic features. Delusion content classification comprised four ICD-10 content items (Table 2). Mean length of untreated psychosis was 4 months (S.D. = 3.74, range = 0-11), mean length of psychotic illness until EI-GCBTp session 1 was 19 months (S.D. = 8.8, range = 10-40), and mean duration of the chosen delusions was also 19 months (S.D. = 9.99, range = 3–40). At the time of the first EI-GCBTp session patients in the effectiveness analysis (n = 11) were

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Table 2. *The specific single delusional beliefs patients chose (total n = 11) (n = 7 persecutory, n = 1 catastrophe, n = 1 grandiose, n = 2 thoughts broadcast)*

Participant	Delusion
1	An extra-terrestrial being has implanted a computer chip in my head and body to control and harm me (ICD-10: 19.12, Persecutory)
2	The puppet master controls me (and everyone) and he's making me try to kill myself (ICD-10: 19.12, Persecutory)
3	My thoughts are broadcast to everyone in the world (ICD-10: 18.1, Thoughts Broadcast)
4	I am under threat of intentional severe violent harm (ICD-10: 19.12, Persecutory)
5	People from my estate are following me, talking about me, and conspiring against me. I believe that I am swearing under my breath and this is being heard by people on my estate and that's why they want to hurt me (ICD-10: 19.12, Persecutory)
6	Martians have put a chip in my brain and want to clone me for a new race. The FBI want information from me about this so they are tracking my every movement and are spying on me (ICD-10: 19.35, Grandiose).
7	People are watching and talking about me and I believe I will be verbally and physically attacked (ICD-10: 19.12, Persecutory)
8	I and others are under severe threat of physical harm from glass (ICD-10: 19.31, Catastrophe)
9	I believe that I am under verbal and physical threat from others (ICD-10: 19.12, Persecutory)
10	When out in public, strangers can read my mind and when they do they directly/indirectly give their opinion about issues/events/things I have thought of. This means they are telling me what to do (ICD-10: 18.1, Thoughts Broadcast).
11	A female, who may be a witch, reads my mind, manipulates my thoughts and uses spirits to control my body as well as my senses, through black magic (ICD-10: 19.12, Persecutory)

taking olanzapine ($n = 3$), risperidone ($n = 2$), aripiprazole ($n = 3$), haloperidol ($n = 1$), clozapine ($n = 1$), and quetiapine ($n = 1$). The duration of antipsychotic medication until the first EI-GCBTp treatment session was (in months): mean = 15, median = 18, S.D. = 10.3, range = 2–38. Seven (63.6%) out of 11 patients were taking their second or third consecutive antipsychotic medication. All patients stated that they continued to be adherent to their medications but their delusions remained problematic.

Feasibility: attendance

Each group had a minimum of three patients in attendance. The overall mean group attendance was three patients (group 1: four patients, 32 attendances; group 2: four patients, 32 attendances; group 3: three patients, 24 attendances), and the total number of sessions attended across the three groups and 24 sessions was 88. (Note: Patients *only* attended group 1 sessions or group 2 sessions or group 3 sessions, no patient ever attended more than one episode of sessions). Attendance figures include six patients not included in the effectiveness analysis or sample characteristics results: three drop-outs, one lost to follow-up, and two refused publication (one other patient never attended at all).

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Table 3. *Patient satisfaction (n = 11)*

Satisfaction domain	Mean (S.D.)
Knowledge:	
I have learned much more about:	
The structure of my belief	1.6 (0.67)
What originally contributed to me forming my belief	1.6 (0.67)
What things keep me believing the belief	1.5 (0.52)
What aspects of the belief cause me distress	1.4 (0.67)
What I can do to reduce distress/interference caused by the belief	1.5 (0.68)
Effectiveness:	
Because of the group:	
I now have more confidence to cope with my belief	1.5 (0.69)
I am now overall less distressed or bothered by the belief	1.7 (0.79)
This group has been effective for me	1.5 (0.69)
Overall Satisfaction:	
I am satisfied with the group	1.6 (0.9)
I would recommend the group to other people with similar beliefs	1.3 (0.9)
Qualitative:	
Found helpful: Learning what contributed to my belief; sharing beliefs and going through it together; learning alternative beliefs; learning others ways of coping; fun group.	
Did not like: Not enough people; silence of others; spending more time at the Health Centre; going off subject; too many forms.	

1, Strongly agree; 2, slightly agree; 3, unsure; 4, slightly disagree; 5 strongly disagree.

Acceptability: satisfaction

Table 3 shows that satisfaction scores were high (all means were between 1 'agree strongly' and 2 'agree slightly') for all 10 items across the three domains of Knowledge, Effectiveness and Overall Satisfaction. Table 3 also shows qualitative information.

Safety

No adverse effects as a result of attendance to the group were found.

Delusion dimensions

TAU period. One patient attended for the first time at session 1 so missed any pre-baseline assessment, hence the TAU period is $n = 10$ not $n = 11$. The mean length of time between pre-baseline assessment and session 1 (TAU period, $n = 10$) was 23.9 days (S.D. = 12.8, range = 1-49). The PSYRATS total pre-baseline ($n = 10$) *vs.* session 1 ($n = 10$) was non-statistically significant [pre-baseline mean = 17.1 (S.D. = 5.0) *vs.* session 1 mean = 16.1 (S.D. = 4.2); Wilcoxon mean rank 4.8 *vs.* 5.8, $z = -1.32$, $p = 0.19$]. Resistance was the only statistically significant change, a reduction of 6% (pre-baseline mean = 8.5 *vs.* session 1 mean = 8.0).

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Group CBT treatment. General timing and pattern of change across treatment period. Table 4, and Figures 1 and 2 show that all 13 delusion dimensions, except 'Resistance', showed reductions in mean scores between treatment sessions 1–8. Figures 1 and 2 show that mean scores for all delusion dimensions, except 'Resistance' tend to decline from sessions 1 to 4, then increase slightly between sessions 5 and 6, before decreasing again at sessions 7 and 8.

Statistically significant reductions. The main aim of this service evaluation relates to specific delusion dimensions, but we also report that the PSYRATS total reduced significantly during the treatment period [$n = 11$: session 1 mean = 16.0, S.D. = 4.0 *vs.* end-of-treatment session 8 mean = 11.0 (S.D. = 4.7); Wilcoxon repeated measures mean rank: 5.9 *vs.* 1.5, $z = -2.7$, $p = 0.008$]. There was an overall 31.25% reduction in PSYRATS score and this equates to a large Cohen's d effect size of $d = 1.2$ (95% confidence interval = -2.53 to 0.05; session 1, mean = 16; session 8, mean = 11; baseline S.D. = 4.02).

Table 4 shows that four delusion dimensions displayed statistically significant reductions between sessions 1 and 8: PSYRATS 'Intensity of Distress' ($p = 0.02$), a 39% reduction, seven patients reduced at least one level; PSYRATS 'Frequency of Distress' ($p = 0.03$), a 30% reduction, seven patients reduced at least one level; PSYRATS 'Life Disruption' ($p = 0.01$), a 48% reduction, seven patients reduced at least one level; for CDRS 'Dismissibility' ($p = 0.04$) there was a 28% score reduction and seven patients reduced by at least 25%. All statistically significant reductions were also clinically significant (≥25% reduction in at least 50% of the sample). Table 4 also shows two statistical trends for delusion reduction ($p = 0.05$-0.09). No dimensions became statistically significantly increased comparing session 1 with session 8.

Discussion

The feasibility, acceptability, safety and effectiveness of an EI-GCBTp with an exclusive focus on single medication-resistant delusional beliefs was examined via a service evaluation. Methodological enhancements over previous studies, such as a pre-baseline design and more comprehensive and frequent dimensional assessment of the delusions, provided an opportunity to identify the speed, timing and duration of any dimensional changes of the delusions during the treatment.

Feasibility

EI-GCBTp exclusively focused upon single delusional beliefs is feasible even with medication-resistant patients. Further, nearly half of patients were non-white, so our sample was more representative of UK routine clinical care services than most other studies of CBT for medication-resistant patients (Rathod *et al.* 2008, p. 31), lending weight to external validity.

Acceptability

Satisfaction scores were high. Qualitatively, patients valued the sharing, discussion and alternative ideas about their previously highly private delusional beliefs. Peer-Socratic questions were common, three examples are given: first, one patient asked the patient who believed that their thoughts were broadcast to everyone in the world, whether the patient was waking up people in Australia during the group, which appeared to help the patient to more

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Table 4. *Delusion dimension scores*

Dimension	Pre-baseline (mean, S.D.) ($n = 10$)	Session 1 (mean, S.D.) ($n = 10$)	Stat. sig. Pre-BL-1 (z, p) ($n = 10$)	Session 1 (mean, S.D.) ($n = 11$)	Session 8 (mean, S.D.) ($n = 11$)	Stat. sig. sessions 1–8 (z, p) ($n = 11$)
Psychotic Symptom Rating Scale						
Conviction	3.0	3.1	−0.45	2.91	2.36	−1.51
	0.94	0.57	0.66	0.83	1.1	0.13
Frequency of Preoccupation	3.1	2.6	−1.23	2.55	1.91	−1.63
	0.88	0.84	0.21	0.82	1.04	0.10
Duration of Preoccupation	2.9	2.6	−0.72	2.64	1.82	−1.85
	0.99	1.27	0.47	1.21	0.87	0.06
Intensity of Distress	2.9	2.5	−1.41	2.55	1.55	−2.42
	0.88	0.97	0.16	0.93	0.82	0.02*
Frequency of Distress	2.9	3.2	−1.13	3.27	2.27	−2.21
	1.10	0.92	0.26	0.91	1.42	0.03*
Life Disruption	2.3	2.1	−1.0	2.1	1.1	−2.46
	1.06	1.1	0.32	1.04	0.7	0.01*
Characteristics of Delusion Rating Scale						
Resistance	8.5	8.0	−2.24	8.1	8.0	−0.14
	2.07	2.1	0.03*	2.02	1.95	0.89
Dismissibility	7.8	7.4	−1.41	7.18	5.18	−2.11
	1.4	2.4	0.16	2.36	2.68	0.04*
Absurdity	6.9	5.6	−1.28	6.0	4.91	−1.34
	3.13	2.1	0.20	2.41	2.78	0.18
Pervasiveness	7.2	6.7	−1.16	6.73	5.56	−1.71
	1.5	2.1	0.25	1.95	2.66	0.09
Belief Rating Scale						
Influence on Behaviour	6.7	6.0	−1.22	5.91	4.91	−1.03
	2.5	2.8	0.22	2.63	2.5	0.31
Influence on Thinking	8.4	6.7	−1.63	6.73	4.82	−1.84
	1.7	2.2	0.10	2.05	2.32	0.07
Importance of Belief	6.8	7.2	−0.68	7.27	5.64	−1.49
	2.9	2.3	0.50	2.15	2.94	0.14

S.D., Standard deviation; Stat. sig., statistical significance.
* $p < 0.05$.

easily dismiss the delusional belief when it occurred. Second, the patient who believed the FBI were after him was asked by another patient if the FBI were only allowed to operate in America, and the patient said they had never thought of this, and it appeared to increase doubt in the belief. Third, one patient wanted to know what another patient could have possibly done to merit the perceived risk of being violently harmed, and the absence of any reason appeared to help the patient become more realistic about the likelihood of continuing and future persecution.

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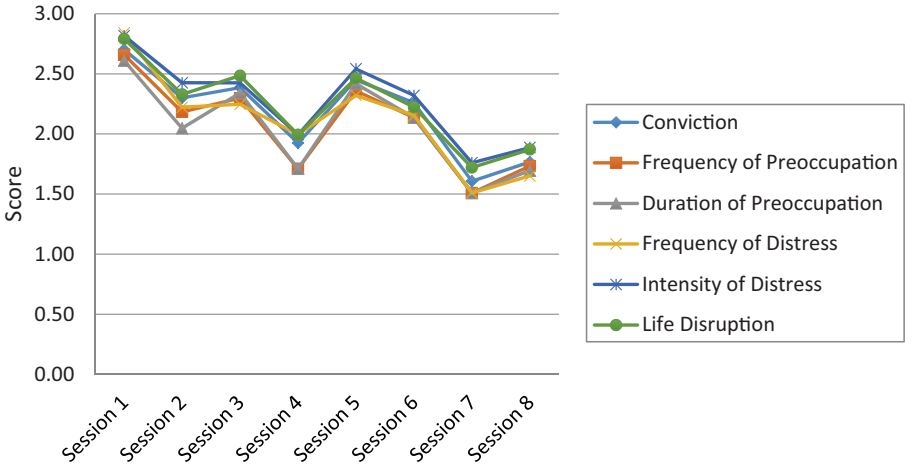

Fig. 1. Psychotic Symptom Rating Scale delusion dimension mean changes across eight treatment sessions ($n = 11$). Group 1 (session 6) and group 3 (session 4) had a 2-week gap.

Given that the drop-out rate was 3/14 (21%, for patients who attended, but for less than four sessions) or 4/15 (26%, including the one patient who was screened but who never attended the group at all) the treatment format may not be acceptable/feasible for about a quarter of early course patients who hold persistent delusions (comparable to medication non-adherence rates, e.g. Nose *et al.* 2003). The drop-out patients were all males, so men may require greater attention to sustain engagement. Suspiciousness was certainly not a barrier to attendance since most patients held persecutory beliefs. Anecdotally, it appeared that the reasons for dropping out may have been quite diverse (e.g. negative symptoms, substance abuse, lack of insight, and lack of engagement with the early intervention team generally).

Safety

Despite intervening early there were no serious untoward incidents or delusional deteriorations sufficient to remove patients from this service evaluation.

Effectiveness

There was virtually no change in the TAU period but during the treatment period there was a statistically significant large effect size ($d = 1.2$) on the PSYRATS total score which was reduced by 31% (session 1, mean = 16; session 8, mean = 11; difference mean = 5), a magnitude considered to be clinically significant (Leucht *et al.* 2006; Morrison *et al.* 2014). This pre/post-effect size is more than EI-GCBTp studies that included multiple therapeutic targets [0.89 (Gaynor *et al.* 2011), 0.45 (Chung *et al.* 2013)] and a recent study of individual CBT for medication-resistant psychosis in a chronic sample [0.51 (Morrison *et al.* 2014)] where a 22% reduction in delusion severity was achieved. Despite the PSYRATS baseline total severity score in our service evaluation being higher than other early intervention and non-EI-GCBTp studies (Chung *et al.* 2013; van Oosterhout *et al.* 2014) and similar to the individually

https://doi.org/10.1017/S1754470X16000179 Published online by Cambridge University Press

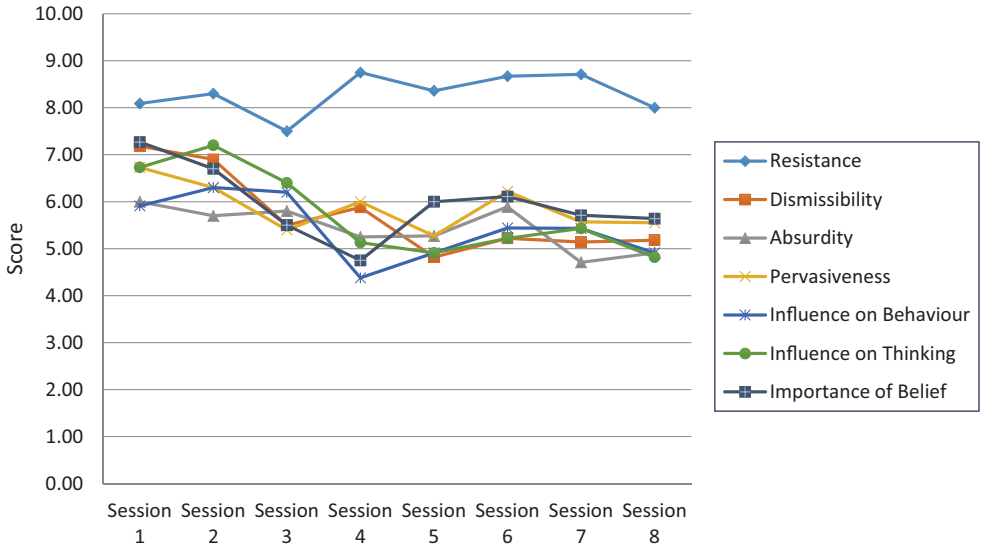

Fig. 2. Characteristics of Delusion Rating Scale (CDRS) and Belief Rating Scale (BRS) delusion dimension changes across eight sessions ($n = 11$). Group 1 (session 6) and group 3 (session 4) had a 2-week gap. CDRS: Resistance, Dismissibility, Absurdity, Pervasiveness; BRS: Influence on Behaviour, Influence on Thinking, Importance of Belief.

delivered CBT medication-resistant study of Morrison *et al.* (2014), clinical improvements were nevertheless found by the end of the group.

Reductions on four specific delusion dimensions were statistically and clinically significant (≥25% reduction in at least 50% of the sample). Our findings of statistical significance for the dimensions of 'Intensity of Distress' (PSYRATS) and 'Dismissibility' (CDRS) concur with those of Landa *et al.* (2006). Additional to this, at the early intervention stage, statistically significant improvements can also be shown in PSYRATS 'Frequency of Distress', and 'Life Disruption'. However, unlike Landa *et al.* (2006), we did not find a statistically significant improvement in PSYRATS delusional 'Conviction', although 6/11 patients improved to a clinically significant degree. The meta-analysis by van der Gaag *et al.* (2014) suggests that medication-resistant delusions would be less responsive to CBT. However, our combination of early intervention plus an exclusive focus on single delusions may be one way of providing the requisite focused intensity on this entrenched symptom, and showing an earlier effect on the delusional beliefs by the end of therapy rather than only at long-term follow-up (Bird *et al.* 2010, p. 353; Pfammetter *et al.* 2006, p. S73).

Efficiency

With the shortest reported DUP to date of any EI-GCBTp study (e.g. Lecompte *et al.* 2003, 2008; Gaynor *et al.* 2011; Chung *et al.* 2013), the delusion improvements were obtained within a shorter time-frame (eight sessions) than the successful EI-GCBTp studies that targeted more than one symptom in the same study (Lecompte *et al.* 2003, 2008; Chung

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et al. 2013; 12–24 sessions); the most similar study on chronic delusions (Landa *et al.* 2006, 13 sessions); and without simultaneous delusion-focused individual CBT (Levine *et al.* 1998; Landa *et al.* 2006). Thus the combination of early intervention and a singular-symptom focus appears to augment clinical efficiency.

Despite initial reductions in intensity, delusion severity did generally increase slightly between weeks 4–6 before reducing back down again, coinciding with missed sessions due to patients' physical illnesses and the more challenging cognitive strategies introduced at this time (Table 1). This example shows that our novel 'during-therapy-assessments' design permitted for the first time a matching between CBT intervention content with a specific psychosis outcome, something noted by Turner *et al.* (2014, p. 10) as lacking in the evaluation evidence base.

Limitations

Further to our small sample size and one-quarter drop-out rate (noted above), our service evaluation did not contain a control group. Moreover, the pre-baseline period was shorter than the treatment period, which arguably permitted less time for the severe delusions to reduce. So while we can say that delusions improved, we cannot be sure the intervention was responsible, or whether progress would have been sustained beyond eight sessions. Our preliminary outcome data are also seriously limited because the assessors were the therapists, which may have created demand effects, and they were not blinded (Wykes *et al.* 2008; van der Gaag *et al.* 2014). Further, four patients had also received individual CBT, albeit for problems other than the chosen delusion. Given the small sample size, we judged that it was not possible to rerun the analyses to determine whether the pattern of changes remained if these four patients were excluded. Adapting the three BRS items and using only selected dimensions from the BRS and CDRS means that the supporting psychometric data for those instruments can no longer be assumed. Overall, the design limitations of our service evaluation cautions us against generalizing these results to the wider population without further more extensive RCT designs to confirm our findings, even though the patients may have been more representative of patients in routine care than those participating in most research studies.

Future

Future research could investigate EI-GCBTp in larger-scale and under more rigorous designs (e.g. larger sample, randomization, blinded assessors, etc.), incorporating also the new methodological improvements we advocate here (e.g. frequent multi-dimensional assessments), as part of a more comprehensive intervention evaluation template.

Conclusion

The primary findings of our service evaluation are that EI-GCBTp for medication-resistant delusional beliefs appears to be feasible, acceptable and safe. Our service evaluation also highlights the possibility patients may be able to reduce the intensity of several key delusion dimensions during brief group cognitive behaviour therapy if intervention is early and focuses exclusively on single delusional beliefs. The new treatment format may be suitable for about three-quarters of patients who have medication-resistant delusions, and males may require more intensive engagement. This service evaluation suggests that EI-GCBTp for medication-resistant delusions warrants larger-scale more rigorous testing.

https://doi.org/10.1017/S1754470X16000179 Published online by Cambridge University Press

Main points

(1) CBT for delusions has a low effect size, so further innovations in treatment are needed.
(2) We present a new group CBT treatment format which combines early intervention with a specific targeting of medication-resistant single delusions.
(3) The new treatment format was feasible and acceptable with about three-quarters of medication-resistant patients, it was safe, and it was associated in our small uncontrolled service evaluation with a rapid and large effect size comprising improvement on several delusion dimensions.
(4) Future studies could now test the treatment with larger-scale more rigorous designs.

Ethical statement

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Acknowledgements

For additional data collection and/or group support, thanks are due to EIPS assistant psychologists Suzanne Law, Sanna Khan and Raythe Harvey; and trainee clinical psychologist Alison Griffiths (UCL Doctorate in Clinical Psychology). For medication advice thanks are due to consultant psychiatrist Dr Saal Seneviratne. Sandra Kiryate (University of Hertfordshire MSc Research Methods) contributed editorial support. For managerial support thanks are due to Leanne Frizzel and Chris Ugochukwu. The data in this manuscript appears in unpublished Doctorate in Clinical Psychology Service-Related Research projects from Royal Holloway, University of London and University College London, University of London.

This service evaluation received no specific grant from any funding agency, commercial or not-for-profit sectors.

Declaration of Interest

The authors have no conflict of interests with respect to this publication.

Further reading

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Learning objectives

(1) Knowledge of the current evidence base of group CBT for delusions.
(2) Learning a new treatment format and content for group CBT for delusions.
(3) Knowledge of a more comprehensive method of service evaluation for group CBT for delusions.