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A randomized controlled trial examining the impact of individual trauma-focused therapy for individuals receiving group treatment for depression

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Objectives. Adverse life events are associated with increased likelihood of depression and poorer prognosis. Trauma-focused treatments (TFT) appear to be effective in decreasing comorbid depressive symptoms. Accordingly, the aim of this study was to evaluate the effectiveness of a TFT on the memories of aversive events for individuals with a primary diagnosis of depression.

Methods. A randomized controlled trial was conducted with 49 participants recruited from a 10-day outpatient group programme. All participants showed symptoms of depression with a subgroup (80%) meeting the DSM-5 criteria for a major depressive episode. Participants received treatment as usual (TAU); three additional individual trauma-focused sessions; or three additional individual assertiveness training sessions. Participants were assessed with regards to depression diagnosis and related symptoms.

Results. For participants with a major depressive episode, the addition of trauma-focused sessions significantly increased the likelihood of remission when compared to TAU, or additional assertiveness training. While no significant treatment difference was noted in depressive symptom change post-treatment, six weeks after treatment those who received an adjunct treatment were more likely to maintain treatment gains than those who received TAU. Furthermore, at 12-week follow-up, participants who received a TFT reported significantly fewer depressive symptoms than those who received assertiveness training.

Conclusions. While differences in outcomes were minimal immediately post-treatment, differences among treatment groups increased over time. Thus, as few as three additional TFT sessions may impact positively on symptom change for people completing a group programme for the treatment of depression.

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Practitioner points

- Depression is the greatest cause of disability worldwide.
- Adverse experiences are linked with an increased likelihood of depression, more severe symptoms and poor treatment outcomes following evidence-based interventions.
- As few as three trauma-focused sessions can improve treatment outcomes in terms of depression diagnosis and related symptoms for individuals receiving group cognitive behavioural therapy.

Background

The World Health Organisation (2017) identified depression as the leading cause of disability worldwide. Although there is evidence to support a range of effective psychological and pharmacological interventions, between 30% and 50% of individuals who have recovered from depression experience recurrence of symptoms within two years of completing treatment (Richards, 2011; Vittengl, Clark, Dunn, & Jarrett, 2007). Accordingly, there is a need to explore alternative treatment options.

Depression and adverse life events

Stressful life events have been repeatedly associated with increased risk of psychopathology, including depression (Laugharne, Lillee, & Janca, 2010). In addition to increased prevalence of depression, adverse experiences are associated with more severe symptomatology, decreased treatment response and increased relapse rates following psychological and pharmacological treatments, when compared to individuals without a history of adversity (van der Kolk *et al.*, 2007; Nanni, Uher, & Danese, 2012). Further, these adversities do not need to be life-threatening or objectively severe to have a negative impact. In light of the link between adversities and distress, Brewin and colleagues discuss the limitations of restricting post-traumatic stress disorder (PTSD) diagnoses and related treatments to only certain types of adverse experiences (Brewin, Lanius, Novac, Schnyder, & Galea, 2009). In addition, in a recent meta-analysis examining the differences between significant trauma and life adversities, Larsen and Pacella (2016) highlight that many individuals have significant trauma symptoms in the absence of an objective traumatic experience, which is required for a diagnosis of PTSD.

The impact of adverse experiences may support a symptom-based, transdiagnostic approach to mental health treatment. Depression and PTSD share many symptoms including low mood, distorted cognitions, and changes in arousal (American Psychiatric Association, 2013; Brewin, Lanius, *et al.*, 2009). Further, many depressed patients report intrusive and distressing memories of specific events in their lives, which act as a maintaining factors (Brewin, Wheatley, *et al.*, 2009). Treatment of these memories has been found to reduce symptoms of depression (Brewin, Wheatley, *et al.*, 2009). Despite this, perhaps due to the absence of a significant traumatic event, the importance of past adversities may be overlooked and these maintaining factors not addressed.

In some theoretical approaches to psychopathology, it has been hypothesized that early emotional experiences are aetiologically relevant to subsequent adult psychopathology. For example, in schema therapy early adverse experiences are thought to give rise to early maladaptive schemas (EMS). The EMS are then further reinforced by behavioural patterns and are responsible for significant ongoing distress and related to various chronic conditions and symptom disorders including depression (Young, Klosko, & Weishaar, 2003). During schema therapy, these core memories become treatment targets, and trauma-focused approaches such as imagery rescripting or eye movement desensitization and reprocessing (EMDR) have been proposed to facilitate emotional and cognitive

changes to the memories (Young et al., 2002). However, the degree that such trauma-focused approaches lead to symptom change for disorders other than PTSD has rarely been evaluated.

Trauma-focused treatments for depression

Trauma-focused treatments (TFTs) refer to a range of interventions that target the symptoms of PTSD. This includes cognitions, avoidance and safety behaviours, and intrusive memories (Olff *et al.*, 2019). TFTs include trauma-focused cognitive behavioural therapy (CBT), EMDR, prolonged exposure, cognitive processing therapy, exposure-based cognitive therapy, and imagery rescripting. Although treatments vary, several common factors have been identified including psychoeducation and experiential exposure techniques (Schnyder *et al.*, 2015).

TFTs are effective in decreasing symptoms of comorbid depression in individuals with PTSD (International Society of Traumatic Stress Studies, 2019). Based on this evidence, the established links between past adversities and depression, and the common symptoms noted between the disorders, several researchers have also investigated the efficacy of TFT on depression symptoms in the absence of PTSD. In 2007, Hayes and colleagues used exposure-based cognitive therapy to address past adversities for depressed individuals which resulted in significant positive cognitive change. Following, in 2009 Brewin and colleagues found imagery rescripting resulted in significant symptom reduction for depressed individuals with intrusive memories. Since this time there have been numerous trials investigating a range of TFT's (trauma-focused CBT, EMDR, and self-guided imagery rescripting) as interventions for individuals for whom depression is their primary clinical concern (Carletto *et al.*, 2017; Minelli *et al.*, 2019; Ostacoli *et al.*, 2018). This study aims to build on these findings.

While there are three randomized controlled trials (RCTs) comparing TFTs as an adjunct therapy for depression (Hase *et al.*, 2018; Minelli *et al.*, 2019; Ostacoli *et al.*, 2018), and two as a stand-alone therapy (Gauhar & Wajid, 2016; Moritz *et al.*, 2018), no study to date has compared a TFT with an alternative treatment and treatment as usual (TAU). This is important because the inclusion of an active control could help determine if the TFT per se was responsible for any additional improvement beyond TAU, or whether any targeted depression treatment might achieve the same effect. In addition, all but one of the RCTs used self-report data to analyse symptom change (Gauhar & Wajid, 2016; Hase *et al.*, 2018; Moritz *et al.*, 2018; Ostacoli *et al.*, 2018) and none of the studies used a specific diagnostic interview to detect change with regards to meeting diagnostic criteria for a major depressive episode.

Aim and hypotheses

The aim of this study was to evaluate the impact of an adjunct TFT on depressive diagnosis and related symptoms against TAU and an active control for individuals receiving a group psychotherapy programme. While there is evidence to support a range of TFTs, EMDR was chosen for use in this study. This was due to the research suggesting that EMDR may require fewer treatment sessions, and the lack of homework use in the intervention, which makes it more attractive in the research setting (Ironson, Freund, Strauss, & Williams, 2002; World Health Organization, 2013).

The active control group built on the CBT skills delivered in sessions and incorporated assertiveness training. Assertiveness training was used to ensure that this group received additional evidence-based content that complemented the group work. In recent meta-

analyses, interpersonal styles (e.g., assertive or aggressive) were significantly associated with depressive symptoms, and the effect size of the association increased with depression severity (Bird, Tarsia, & Schwannauer, 2018). Furthermore, assertiveness training was associated with a decrease in depressive symptoms with treatment gains maintained at follow-up (Lin *et al.*, 2008; Speed, Goldstein, & Goldfried, 2018).

It was hypothesized that for participants in a group psychotherapy programme, those receiving additional individual trauma-focused sessions would be less likely to meet criteria for a major depressive episode at follow-up and would show a greater decrease in depressive symptoms when compared to TAU or TAU plus three additional assertiveness training sessions.

Method

Trial design

This research was undertaken at a private psychiatric hospital. The study was a multi-arm parallel RCT examining the effect of additional treatments while receiving a group psychological intervention. The primary outcomes were depression diagnosis and symptoms following a TFT (experimental condition), assertiveness training (active control), and TAU (control condition). Prior to data collection commencing this trial was registered with the Australian and New Zealand Clinical Trials Registry and ethical approval was obtained from relevant university and hospital ethics committees.

Participants

Individuals enrolled in the hospital's Mood and Anxiety Management Programme (MAMP) from June 2017 to October 2018 were given a brochure in their intake assessment and invited to participate. If they expressed interest in participating, they were then contacted by a member of the research team and an initial assessment was booked. Individuals were referred to the MAMP by their psychiatrist or general practitioner.

Inclusion into the study required being a patient in the MAMP, aged 18 or older and meeting the DSM-5 criteria for a depressive and/or anxiety disorder as diagnosed by their referring physician. Participants were excluded from the MAMP if they were acutely suicidal or had significant drug or alcohol difficulties.

Clinical interventions

Group programme

All participants received a two-week ten-day CBT-based group intervention delivered by clinical psychologists or clinical psychologist registrars. Group sessions were held each day for three hours.

Adjunct sessions

Additional research interventions were delivered individually in three, 90-minute sessions over the duration of the MAMP. Three sessions were chosen as there is evidence to suggest that both CBT-based interventions and TFTs can positively impact on mental health symptoms within this time frame (Behnammoghadam, Alamdari, Behnammoghadam, & Darban, 2015; Jonsbu, Martinsen, Morken, Moum, & Dammen, 2013). This also reflects

the clinical experience of the authors with regards to the time needed to process a past memory. This involves one session for psychoeducation and preparation and two sessions processing the trauma. This is consistent with protocols from other studies that suggest that therapists should move on from a memory after two processing sessions (de Haan *et al.*, 2017).

Experimental condition – TFT (EMDR)

Therapy followed the standard eight-phase EMDR protocol (Shapiro, 2001). In session one, the therapist delivered phases one to three, involving assessment, preparation, and identifying target memories. This included introducing the adaptive information processing (AIP) theory which explains the ongoing distress caused by past traumatic experiences. The therapist then highlighted links between non-objectively traumatic events and symptoms of PTSD, such as avoidance, distress, and negative cognitions. Following this, participants were asked to identify any past events that continued to have a strong negative emotional reaction or are linked to currently held negative cognitions. If they were unable to do this, the therapist asked about recent events that prompted their referral to the MAMP or any negative core beliefs that had been identified in their group work. The client was asked to review the thoughts, emotions, and related body sensations of these current experiences or beliefs and scan back through their life to identify when they first experienced this. The therapist recorded these events using a trauma map to collaboratively identify the participant's most stressful life experience. Participants were encouraged to identify memories that were vivid and distressing. In sessions two and three, the therapist delivered phases three to eight of EMDR, incorporating identifying target memories, processing, integration of positive belief, body scan, closure, and re-evaluation. A summary of the EMDR protocol is presented in Table 1.

Active control – Assertiveness training

In addition to incorporating core CBT skills building on the content that was addressed in the group, the assertiveness training was based on the Centre for Clinical Interventions 'Assert Yourself' training workbook (Michel, 2008). In session one, the participant was provided with an information brochure and psychoeducation regarding assertiveness, and the content discussed in the group programme was reviewed. Session two and three continued to facilitate the knowledge and practice of assertiveness skills. A summary of the content delivered in the assertiveness training sessions is shown in Table 2.

Control – Treatment as Usual (TAU)

The TAU group completed the MAMP group but did not receive any individual treatment. Following the six-week assessment, those in the TAU group were given the choice of receiving three therapy sessions in either TFT or assertiveness training. Accordingly, this group was not included in the 12-week assessment.

Outcomes

All participants were assessed at baseline, at completion of the intervention, and six weeks post-intervention. Participants in the adjunct treatment groups were also assessed

Table 1. Trauma-focused treatment session outline: Eye movement desensitization and reprocessing

Session	Content
1	EMDR phase 1–3
	• Introduce EMDR – complete expectation question • Discuss adaptive information processing theory and provide psychoeducation • Procedural preparation, including containing strategy and safe place • Draw memory map of adverse experiences via discussion or affect bridge • Identify target memory • Identify negative positive and negative cognition • Complete assessment form (IES-R) • Give client handout on EMDR
2	EMDR (phases 3-7)
	• Complete assessment form (IES-R) • Desensitise target memory • Install positive belief • Complete body scan • Use container or safe place as needed
3	EMDR (phases 3-8)
	• Complete assessment form (IES-R) • Desensitise target memory • Install positive belief • Complete body scan • Use container or safe place as needed • If memory has been completely processed as per protocol the participant is asked to identify an additional memory a future situation that causes distress • Set dates for subsequent assessments

EMDR = eye movement desensitization and reprocessing; IES-R = Impact of Event Scale – Revised.

12 weeks after treatment had ceased. Process measures were administered in the individual sessions, and in the post- and six-week follow-up assessments.

Primary analysis

The primary dependent variables were depression diagnosis and related symptoms. Depression diagnosis was defined as the presence of a major depressive episode (MDE) assessed by the Module A of the Structured Clinician Interview for DSM Disorders – Fifth Edition (SCID-5) (First, Williams, Karg, & Spitzer, 2015). Although data are not available for the current version, past versions have been shown to have fair to good inter-rater reliability (Cohen's kappa ranging from $\kappa = .61$ to $\kappa = .80$), and it is considered the gold standard in clinical assessment (First *et al.*, 2015). The SCID-5 was administered by qualified clinicians who were conversant with DSM-5 diagnostic criteria.

Depressive symptoms were assessed by the Depression, Anxiety and Stress Scale – 42 (DASS-42). The DASS-42 is a 42-item self-report questionnaire comprising three self-report scales that assess the symptoms of depression, anxiety and stress (Lovibond & Lovibond, 1995). The DASS-42 displays sound psychometric properties; the internal consistency

Table 2. Assertiveness training session outline

Session	Content
1	What is assertive behaviour
	• Introduce CBT-based assertiveness training – complete expectation question • Complete assessment form (RAS) • Draw five factor model with client example • Define assertive communication styles • Look at common myths of assertiveness behaviour • Discuss the impact of not being assertive and origins of assertiveness (link to core beliefs) • Brainstorm what stops us being assertive • Give client handout on Assertiveness
2	Thinking Assertively
	• Complete assessment form (RAS) • Identify communication styles • Cognitive distortions: complete patterns of thinking table • Cognitive restructuring: Examine thought logs with regards to different communication styles • Discussion surrounding how an individual's core beliefs can influence their ability to be assertive
3	Building on General Assertiveness Techniques
	• Complete assessment form (RAS) • Discuss non-verbal communication and behaviour • Introduce specific assertiveness strategies. • Discuss specific strategies, relative to the individuals current and past experiences • Highlight the role of practice for ongoing change. Give specific examples of a range of different activities in daily life • Set dates for subsequent assessments

Note. Based on the Centre for Clinical Interventions 'Assert Yourself' training workbook (Michel, 2008). CBT = cognitive behavioural therapy; RAS = Rathus Assertiveness Schedule.

(Cronbach's alpha) for the subscales ranges from = .92 to = .97 and correlates highly with other highly regarded psychometric assessments (Antony, Bieling, Cox, Enns, & Swinson, 1998).

Medication use and psychiatric hospital admissions were monitored at each assessment. These were collected via participant self-report.

Process measures

The participants who received the TFT were assessed using the Impact of Events Scale – Revised (IES-R). The IES-R is a 22-item self-report questionnaire of current subjective distress in relation to a specific event (Weiss, 2007). Psychometric properties are robust with excellent test–retest reliability (r = .89–.94) and high internal consistency (= 0.96) (Creamer, Bell, & Failla, 2003). When completing the IES-R, the participant was asked to focus on the most distressing memory that they identified, which was the first memory processed. While consideration was given to administering all process measures to all

groups, this was discounted as the assertiveness training group did not identify a target memory and thus could not complete the IES accurately.

Participants in the assertiveness training group were administered the Rathus Assertiveness Schedule (RAS). The RAS is a 30-item schedule designed for measuring assertive behaviour (Rathus & Nevid, 1977). Each item is rated on a scale from −3 to +3 with final scores ranging from −90 to +90. Test–retest reliability for the RAS ranges between .76 and .83, and internal consistency ranges between = 0.73 and = 0.86 (Caballo *et al.*, 2014; Harris & Brown, 1979).

Sample size

Power analysis was conducted with G*Power. Based on an alpha at .05 and an estimated effect size of .8, we estimated that 15 participants in each arm would be sufficient to detect clinically significant change. This is consistent with other studies looking at similar variables with between 10 and 16 participants in each treatment group (Hase *et al.*, 2015; Minelli *et al.*, 2019).

Randomization and blinding

After their initial assessment, participants were randomly allocated to their treatment condition using a GraphPad Software program, QuickCalcs (https://www.graphpad.com/quickcalcs/randMenu/) using block randomization in groups of five. Participants in the TAU condition were informed of this prior to the MAMP. Participants receiving adjunct treatment were told of their intervention group in their initial individual therapy session. Randomization was carried out by a member of the research team, not responsible for post- or follow-up assessments to ensure all assessors were blind to the individual's treatment condition.

Therapists

Individual sessions were delivered by three therapists with general or provisional registration with the Australian Health Practitioner Regulation Authority. All therapists had regular supervision sessions and were trained in the delivery of all assessments and interventions.

Therapists were assessed for adequate treatment fidelity for EMDR prior to seeing participants. In addition, participants were given the option of choosing whether their therapy sessions were video recorded. Based on these recordings, an independent assessor rated treatment fidelity for all therapists on both interventions. EMDR sessions were assessed by the Fidelity Checklist for Processing Sessions (Leeds, 2009). Assertiveness training sessions were assessed using a fidelity checklist designed specifically for this study, which elaborated on the session outline shown in Table 2. Analysis of these sessions showed that each therapist scored the highest rating on at least 85% of items indicating high levels of consistency and adherence to the protocols for all therapists across both interventions.

Statistical methods

All statistical analysis was completed using SPSS Version 24. Analysis was based on intent-to-treat which included all participants who underwent randomization. Missing data were

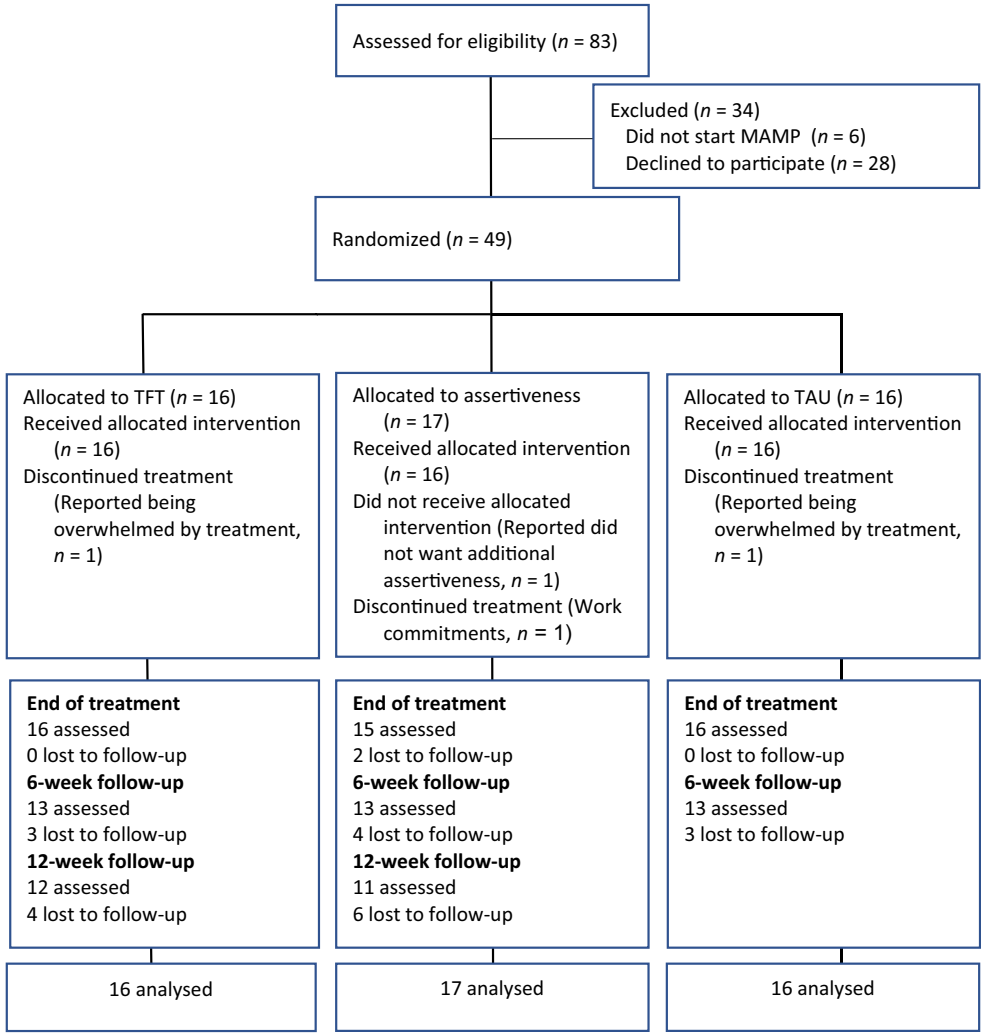

Figure 1. Flowchart of participant recruitment and retention.

replaced using multiple imputation and expectation maximization (Tabachnick & Fidell 2001). Missing data were analysed using Little's Missing Completely at Random (MCAR) test (Li, 2013; Little, 1988).

Analysis

All baseline characteristics were analysed in a between-groups analysis of variance (ANOVA) to identify any potential differences between groups before treatment commenced. The primary dependent variable was depression diagnosis as assessed on the SCID-5. For participants who met the criteria for a major depressive episode at intake, a chi-square test of independence was used to explore whether the treatment condition impacted the likelihood of the participant meeting criteria for depression at a six-week follow-up. To account for variation due to differences in sample size, adjusted residuals

were analysed to ascertain which treatments differed, with a Bonferroni correction for alpha inflation (Garcia-Perez & Nunez-Anton, 2003; Sharpe, 2015).

A 3 × 3 split plot ANOVA (SPANOVA) was used to assess the effect on self-reported depressive symptoms of treatment condition (TFT, assertiveness training, or TAU) and time (at baseline, post-treatment, and 6-week follow-up). Simple contrasts were then used to further evaluate significant effects. An additional 2 × 2 SPANOVA was used to investigate the effect of time (baseline and 12-week follow-up) across the two adjunct treatments.

Process measures were analysed using one-way repeated measures ANOVAs with time (baseline, post-treatment, and 6-week follow-up) as the independent variable. Medication was assessed as stable, increased or decreased by a psychiatrist blind to treatment allocation. The number of psychiatric hospital admissions after baseline was also compared among the three conditions.

Results

Recruitment and participant flow

The trial recruited participants from June 2017 to October 2018. Recruitment ceased as target sample size was achieved. As shown in Figure 1, 83 patients were screened for eligibility and 49 underwent randomization. All 49 participants who were randomized commenced group treatment. Baseline data for depressive symptoms were missing for one participant as this assessment was not completed on intake. Both the TFT and TAU groups had 16 participants (33%) each while 17 participants (35%) were randomized to receive assertiveness training.

Post-assessment data were collected from 46 participants. Unless stated otherwise, all participants completed the MAMP group programme. One assertiveness training participant withdrew from the study prior to receiving his individual intervention as he reported that he did not want to receive assertiveness training. Another assertiveness participant withdrew following her initial individual session, stating conflicting work commitments. One TFT participant withdrew from the study and the MAMP group after her second individual session, citing an increase in overall distress. Similarly, one of the TAU participants withdrew from the group programme after six sessions citing increased distress but did not withdraw from the study and was included in the post-assessment.

Baseline data

Baseline data are presented in Table 3. There were no significant differences across groups at baseline on demographic measures or clinical characteristics. The average age of the 49 participants was 40 years, and 29 (59%) of the participants were female. On intake, 39 (80%) of the participants met the SCID-5 criteria for a current major depressive episode (MDE). Of these 39 individuals, 31 (79%) also met criteria for an anxiety disorder. Of the 10 participants who did not meet MDE criteria, all were taking anti-depressant medications at intake. Six of these individuals met the diagnostic criteria for a past depressive disorder. Of the remaining three, two had a current anxiety disorder and one did not meet any current or past mood or anxiety diagnostic criteria on intake. This participant was referred to the group for mood difficulties alongside past substance misuse disorder. Of the sample, 33 participants (68%) had had at least one previous psychiatric inpatient hospital admission and 44 (91%) were taking psychotropic medication. Of those taking medication, 36 individuals (82%) were taking more than one medication and the most common

Table 3. Baseline Characteristics

	TFT (n = 16)	Assertiveness (n = 17)	TAU (n = 16)	Entire sample (n = 49)
Demographics				
Age, years (mean [*SD*])	39.1 (15.04)	43.4 (17.28)	39.2 (9.86)	40.6 (14.23)
Females (%)	50	58.8	68.8	59.2
Marital status (%)				
Single	43.8	35.3	25	12.3
Married/de facto	31.3	47.1	56.3	44.9
Separated/Divorced/widowed	25.0	17.6	18.8	42.6
Education (%)				
High school	43.8	29.4	31.3	37.4
Trade/technical	25.0	35.3	12.5	25.0
Tertiary	31.3	35.3	56.3	39.6
Work (%)				
Full-time work/study	50	35.3	50.0	32.7
Part-time work/study	18.8	29.4	6.3	22.5
Home duties/carer	0	5.9	12.5	12.2
Not working/studying	31.2	29.4	31.3	32.6
Clinical characteristic				
Number of prior psychiatric hospital admissions (mean [*SD*])	1.5 (0.94)	1.3 (1.21)	1.6 (2.50)	1.5 (1.66)
Substance abuse (%)	12.5	17.6	6.3	12.2
Current psychiatric medication (%)	87.5	94.1	87.5	91.8
Current major depressive episode (%)	87.5	76.5	75.0	79.6
Current generalized anxiety disorder (GAD)(%)	37.5	70.6	68.8	64.1
Current anxiety disorder other than GAD (%)	50	58.9	50	53.8
DASS scores (mean [*SD*])				
Depression	25.00 (11.92)	24.29 (11.20)	22.53 (12.83)	23.98 (11.52)
Anxiety	14.63 (7.44)	17.47 (10.34)	14.47 (6.49)	15.58 (8.28
Stress	20.81 (8.98)	23.88 (11.60)	20.67 (7.93)	21.85 (9.62)
Treatment expectations (%)				
Strongly agree	6.7	23.5	NA	17.2
Agree	62.5	41.2	NA	58.6
Neutral	25.0	17.6	NA	25.1

Note. All p>.05.
TFT = trauma-focused treatment (EMDR); assertiveness = assertiveness training; TAU = treatment as usual; DASS = Depression, Anxiety and Stress Scale.

medication taken was a selective serotonin reuptake inhibitor (n = 21) followed by a selective norepinephrine reuptake inhibitor (n = 10), atypical antipsychotics (n = 9), and benzodiazepines (n = 9).

Participant expectations

In their initial individual session, participants in the adjunct treatment groups were asked to rate how much they agreed with the statement '*Individual psychotherapy using*

Table 4. Baseline, Post-treatment, and follow-up analysis for primary outcome measures by sample and treatment condition

Analysis	TFT	Assertiveness	TAU	Total
Baseline (*n*)	16	17	16	49
DASS Depression Score, mean (*SD*)	25.00 (11.92)	24.29 (11.20)	22.53 (12.83)	23.98 (11.52)
MDE diagnosis %	87.5	76.5	75.0	79.6
Asymptomatic %[a]	13	12	13	12
Completers (n)	15	15	16	46
DASS Depression Score, mean (*SD*)	10.31 (9.25)	15.67 (12.00)	16.38 (13.59)	14.09 (11.81)
Asymptomatic %[a]	53	33	44	43
Intent-to-treat (ITT) (*n*)	16	17	16	49
DASS Depression Score, mean (*SD*)	10.01 (9.20)	15.80 (11.33)	16.38 (13.59)	14.10 (11.63)
Asymptomatic %	56	29	44	43
6-Week follow-up completers (*n*)	13	13	13	39
DASS Depression Score, mean (*SD*)	7.82 (8.36)	11.15 (9.01)	18.85 (13.65)	12.54 (11.36)
Loss of MDE diagnosis %[b]	82*	56	30	56
Asymptomatic %	69	54	31	51
6 Week ITT				
DASS Depression Score, mean (*SD*)	8.35 (7.97)	13.82 (9.99)	17.90 (13.19)*	13.37 (11.09)
Loss of MDE diagnosis %	86	53	33	56
Asymptomatic %	69	41	31	47
12-Week follow-up completers (*n*)	12	11		
DASS Depression Score, mean (*SD*)	7.42 (8.25)	14.55 (8.87)		10.83 (9.11)
Asymptomatic %	83	27		57
12 Week ITT				
DASS Depression Score, mean (*SD*)	8.63 (8.17)*	16.81 (7.50)*		12.84 (8.76)
Asymptomatic %	69	18		42

TFT = trauma-focused treatment (EMDR); assertiveness = assertiveness training; TAU = treatment as usual; DASS = Depression Anxiety Stress Scale; MDE = major depressive episode.
[a]Asymptomatic is DASS depression score in the Normal range; [b]Loss of diagnosis as a percentage of individuals who met diagnosis at baseline; *significant at $p = .05$.

assertiveness training/EMDR is likely to be helpful in decreasing my anxiety or depression' on a five-point scale from strongly agree to strongly disagree. A Mann–Whitney test indicated that there was no difference in participant expectations between those allocated to TFT versus assertiveness training ($U = 83.0$, $p = .277$).

Numbers analysed

Data were analysed by intent-to-treat (ITT). Table 4 shows the outcome data for diagnoses at baseline and six weeks after treatment completion, and symptom scores at all time points. Little's MCAR Test confirmed that the missing data for all variables analysed were missing completely at random (lowest value $p = .18$).

Outcomes

Primary analysis

Major depressive episode (MDE). Based on ITT data, of the 39 participants who met the criteria for a MDE at intake, 17 (44%) continued to do so at six-week follow-up (see

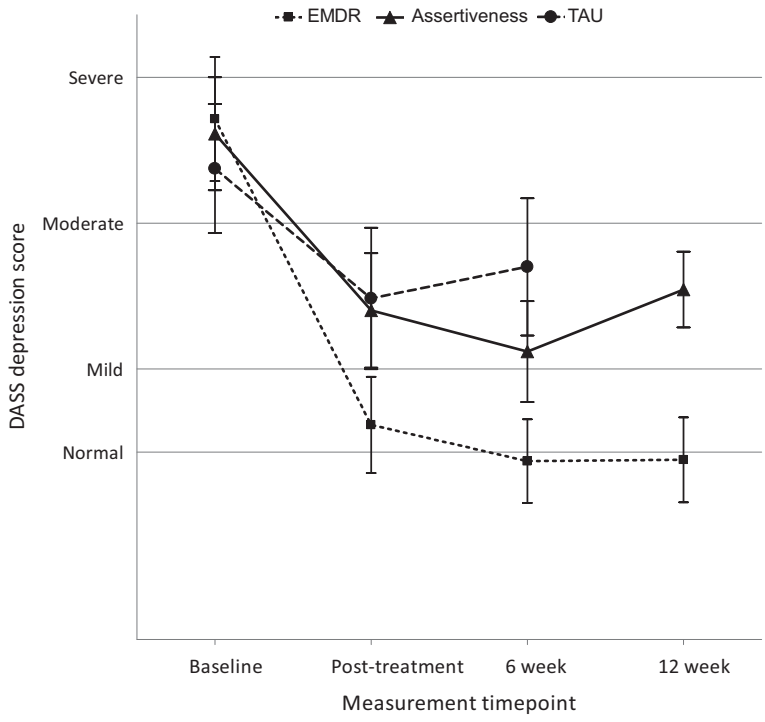

Figure 2. Depressive symptoms at each time point by treatment group (intent-to-treat data).

Table 4). Specifically, 14% of the TFT group, 47% of assertiveness training groups, and 67% of the TAU group maintained MDE diagnosis. A chi-squared analysis indicated that the likelihood of maintaining diagnosis was influenced by treatment condition [χ^2 (2, N = 39) = 8.04, p = .02]. Analysis of the adjusted residuals suggested that participants who received the TFT were less likely to meet criteria for MDE at follow-up than those in the other treatment groups (p = .02). Relative risk calculation showed that those who did not receive a TFT were 4.29 times more likely to maintain their depression diagnosis.

Self-reported depressive symptoms. Average depressive symptom scores as measured by the DASS-42 decreased significantly over time, [F(1.55, 71.25) = 34.33, p < .001, η^2 = .40] (Figure 2). Contrasts revealed that depressive symptoms were significantly lower than baseline immediately post-treatment [F(1, 46) = 36.53, p < .001, η^2 = .42] and at 6-week follow-up [F(1, 46) = 44.98, p < .001, η^2 = .45]. The interaction between the treatment condition and time was significant, [F(3.10, 71.25) = 3.10, p = .03, η^2 = .07], indicating that the amount of change in depression scores across the time points varied across treatment conditions. Contrasts compared each timepoint to baseline, across each of the three treatment groups. These contrasts revealed that there was a significant difference between treatment groups in change in depressive symptoms at six-week follow-up [F(2, 46) = 4.53, p = .02, η^2 = .17] but not at post-treatment [F(2, 46) = 2.38, p = .10, η^2 = .09]. Depressive symptoms decreased over time for both adjunct treatment groups, with an initial reduction post-treatment for TAU that was not maintained at 6-week follow-up. Orthogonal contrasts revealed that there was a difference

between both adjunct treatments and TAU [$t(46) = -2.85, p = .01, d = .81$] at six weeks but not between TFT and assertiveness training [$t(46) = -1.44, p = .13, d = .50$].

An additional 2 × 2 SPANOVA examined the change in depressive scores from baseline to 12-week follow-up for the two adjunct treatments. As shown in Figure 2, the symptom reduction at 6-week follow-up was maintained at the 12-week follow-up for the TFT group, with some symptom increase for the assertiveness training group. A significant main effect of time [$F(1, 31) = 32.23, p < .001, \eta^2 = .51$] showed that overall there was a significant reduction in symptoms from baseline to 12-week follow-up, with a significant group by time interaction [$F(1, 31) = 4.48, p = .04, \eta^2 = .13$]. Participants who received adjunct TFT sessions showed significantly greater average reduction in depressive symptoms at the 12-week follow-up than those who received assertiveness training. This suggests that TFT produced, on average, superior maintenance of treatment gains than assertiveness training.

A sub-analysis was also conducted on only the participants who met MDE criterial at intake. Results suggest almost identical effect sizes for all above analyses.

Process measures

For both adjunct treatments, there was a significant effect of time on each process measure [IES-R total: $F(1.41, 21.12) = 42.67$ $p = < .001$; $\eta^2 = .74$; Rathus: $F(1.49, 23.84) = 12.10$ $p = .001$; $\eta^2 = .43$]. Analysis of content of the identified memories in the TFT group suggests that for 12 participants (75%) the memory did not meet Criterion A for PTSD diagnosis based on DSM-5 criteria (American Psychiatric Association, 2013).

Hospital admissions and medication

At six-week follow-up, four participants had had a psychiatric hospital admission, including two in the TFT group and one for both assertiveness training and TAU. Between the six- and twelve-week assessment, one TFT participant and one assertiveness training participant had an inpatient admission. All of these participants reported that their hospital admission was due to an increase in distress or to monitor medication change. At their final assessment, three of the TFT participants, five of the assertiveness training participants, and six of those who received TAU had increased their medication. None of the participants who received assertiveness training had a decrease in medication intake, while three of the TFT participants and two of the TAU reported taking less psychotropic medication. There did not appear to be a pattern with regards to the type of medication that was changed.

Discussion

The aim of this study was to examine the efficacy of a TFT as an adjunct to group psychotherapy for individuals with depression. In support of the hypothesis, individuals who received TFT were less likely to continue to meet the DSM-5 MDE criteria at six-week follow-up than those who received TAU or assertiveness training. Additionally, six weeks post-treatment, participants who received an adjunct treatment reported significantly fewer depressive symptoms than those who received TAU. Furthermore, at 12-week follow-up, individuals in the TFT condition reported significantly fewer depressive symptoms than those in the assertiveness training group.

The depressive symptom improvements found in this study can be explained in terms of theories that posit the importance of negative experiences on psychopathology, such as schema theory, or the Adaptive Information Processing (AIP) Model. Schema therapy focuses on the contribution of aversive experiences in the development of early maladaptive schemas (EMS) and exacerbation of negative responses in later life. This model is supported by studies that identify measures of EMS as mediators of the relationship between aversive early-life events and subsequent depressive life symptoms (Cukor & McGinn, 2006; Roelofs, Lee, Ruijten, & Lobbestael, 2011). Further, similar to schema therapy, the AIP model that has been proposed to underlie EMDR suggests that current depressive symptoms can be changed by targeting memories that are aetiologically related to the psychopathology (Hase *et al.*, 2018). In CBT and schema-based approaches, clients are often educated about the importance of past adversities in precipitating current thoughts and behaviours (Beck & Beck, 1995; Young *et al.*, 2003). The addition of the TFT extends beyond this educational approach, changing how these memories are perceived, which as we know from studies of PTSD, results in long-term changes related thoughts and affect (Sartory *et al.*, 2013; Seligowski, Lee, Bardeen, & Orcutt, 2015).

Limitations and future research directions

One limitation of this study was the failure to assess and exclude those with PTSD. The impact of TFTs on depressive symptoms might be explained by a decrease in undiagnosed PTSD symptoms, such as intrusions or flashbacks which, in turn, increases negative mood. However, this study and others like it (Bae, Kim, & Park, 2008; Hase *et al.*, 2015) challenge this proposition as the majority of target memories focussed on distressing life events, rather than the objectively traumatic events that are required for a PTSD diagnosis. In addition, while most studies investigating the impact of adversities focus on early-life experiences, in this study 31% of the participants identified an experience after the age of 12. Accordingly, studies assessing and excluding individuals with PTSD on intake are needed, as is further research investigating the impact of the content of the memory and the age of the identified adversity on treatment outcomes.

While EMDR was chosen in this study, there is evidence to support use of a range of TFT to target primary depression (Brewin, Wheatley, *et al.*, 2009; Minelli *et al.*, 2019; Moritz *et al.*, 2018). Similar to other TFTs, EMDR targeted a past adversity, decreasing the distress and related negative cognitions, which appeared to improved mood and decreased depressive symptoms. Further investigation into specific transdiagnostic symptoms, such as mood or intrusive memories, may increase our understanding of the mechanisms for change. Further, additional research investigating differing types of TFTs and intervention delivery (stand-alone vs adjunct) would support our understating of when or how to use these interventions.

The treatment gains made in the TAU group were small and diminished over time. This is consistent with many follow-up studies of CBT interventions on depressive symptoms (Eaton *et al.*, 2008; Shea *et al.*, 1992) and underlines the importance of assessing the efficacy of adjunct treatments such as TFTs to bolster treatment efficacy. In this study, significant effects were noted after just three adjunct sessions. Additional studies examining the impact of differing doses of therapy (number of sessions) would clarify how best to support depressed individuals.

Additional limitations of this study are the relatively small sample size and the heterogeneity of the sample, including participants who did not meet the MDE criteria on

intake. Future studies involving increased sample size, and a more homogeneous sample are required. In addition, given that key differences between treatment groups had strengthened at 12-week follow-up, additional studies evaluating longer follow-up periods are needed to clarify the long-term impact of these interventions. Moreover, studies investigating mediating (such as core schemas or learned helplessness), and moderating (such as symptom severity, client age and number of sessions) factors would also be of interest.

The restricted use of process measures, particularly the IES, to the specific treatment groups is an additional potential limitation. Further research looking at trauma symptoms of all participants may increase our knowledge regarding the impact of these interventions.

Conclusion

The global impact of depression appears to be increasing, and current evidence-based treatments have been shown to have limited effectiveness over time. This study examined the efficacy of three individual TFT sessions compared with three individual assertiveness training sessions and TAU for individuals receiving group psychotherapy for depression and anxiety. Results build on earlier RCTs in this area. While no significant differences among treatment conditions were identified immediately post-treatment, individuals who received a TFT were less likely to meet criteria for depression at six-week follow-up than those who received TAU or additional assertiveness training sessions. They were also more likely to maintain or build on their treatment responses 12 weeks after treatment was completed, compared with those who received individual assertiveness training. Thus, the addition of TFT to psychological interventions for depression may improve treatment outcomes with regards to depressive diagnosis and related symptoms.

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Author contributions

Sarah Dominguez (Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing) Peter Drummond (Formal analysis; Funding acquisition; Methodology; Resources; Supervision; Writing – original draft; Writing – review & editing) Bethanie Gouldthorp (Formal analysis; Supervision; Validation; Writing – original draft; Writing – review & editing) Diana Janson (Data curation; Funding acquisition; Methodology; Project administration; Resources; Validation; Writing – original draft; Writing – review & editing) Christopher Lee (Conceptualization; Formal analysis; Funding acquisition; Methodology; Resources; Supervision; Validation; Writing – original draft; Writing – review & editing).

Conflicts of interest

Sarah Dominguez and Christopher Lee have received fees for providing training in trauma therapies. All other authors declare no conflict of interest.

Ethics approval

Ethics approval was gained through Murdoch University Human Research Ethics Committee (2017/042) and Hollywood Private Hospital Research Ethics Committee (RF104/SGA002).

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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