Is the Eye Movement Desensitisation and Reprocessing Integrative Group Treatment Protocol (EMDR-IGTP) effective for UK Military Veterans with Post-Traumatic Stress Disorder? A Pilot Study

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Abstract

Background

Armed forces personnel frequently witness traumatic events and suffer the consequences of involvement in combat. Improving treatment of post-traumatic stress and related problems for Veterans of these conflicts is important to optimise recovery for survivors. Eye Movement Desensitisation and Reprocessing (EMDR) is a psychotherapy that has been shown to be an effective trauma treatment for military Veterans, while the EMDR-Integrative Group Treatment Protocol (EMDR-IGTP) has been used in many trials with civilian samples, with good results. The aim of this pilot study was to evaluate the effectiveness of the EMDR-IGTP in reducing post-traumatic stress disorder (PTSD) symptoms in military Veterans in the United Kingdom. The study was conducted in 2019 as part of a professional doctorate, and 36 participants met the inclusion criteria.

Methods

The EMDR-IGTP protocol was used with six groups of military Veterans in the United Kingdom. Each group met once a week for six sessions with the groups running consecutively. Questionnaires were completed by participants at every session, and 36 participants took part, with only two not completing the intervention.

Results

The EMDR-IGTP resulted in clinically significant reductions in PTSD symptoms for most participants, with a clinically significant decrease in scores on the PCL-5 ($p < .001$, $d = 2.72$), and clinically significant reductions in symptoms of depression scores on the PHQ-9 ($p < .001$, $d = 1.98$), anxiety scores on the GAD-7 ($p < .001$, $d = 2.54$), and clinically significant improvement in social functioning on the WSAS $p < .001$, $d = 1.40$).

Limitations

This was a small study with self-selecting participants, with no follow-up data, without a control or comparator group and conducted by the same experienced therapist.

Conclusions

The EMDR-IGTP had a statistically significant effect on symptoms of PTSD, depression and anxiety, for this small group of military Veterans. These findings provide preliminary evidence for a novel, cost-effective way of treating Veterans with PTSD, paving the way for larger-scale studies.

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Keywords: EMDR-IGTP, PTSD, Veteran, Military

Contents

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“Remains”

On another occasion, we get sent out
to tackle looters raiding a bank.
And one of them legs it up the road,
probably armed, possibly not.

Well myself and somebody else and somebody else
are all the same mind,
so, all three of us open fire.
Three of a kind all letting fly, and I swear

I see every round as it rips through his life –
I see broad daylight on the other side.
So we’ve hit this looter a dozen times
and he’s there on the ground, sort of inside out,

pain itself, the image of agony.
One of my mates goes by
and tosses his guts back into his body.
Then he’s carted off in the back of a lorry.

End of the story, except not really.
His blood-shadow stays on the street, and out on patrol
I walk right over it week after week.
Then I’m home on leave. But I blink

and he bursts again through the doors of the bank.
Sleep, and he’s probably armed, possibly not.
Dream, and he’s torn apart by a dozen rounds.
And the drink and the drugs won’t flush him out –

he’s here in my head when I close my eyes,
dug in behind enemy lines
not left for dead in some distant, sun-stunned, sand-smothered land
or six-feet-under in desert sand,

but near to the knuckle, here and now,
his bloody life in my bloody hands.

Armitage S. (2008), “Remains” in *The Not Dead,* Pomona Books,
reprinted by permission of the author

Introduction

The researcher is an accredited consultant EMDR therapist and is keen to add to the considerable evidence base surrounding EMDR and PTSD. The researcher has worked with serving military and Veterans with trauma and has previously used a group intervention using EMDR for people with PTSD (Carr, 2017) and wondered if a group treatment intervention could be effective with a military population.

The term Veterans with an initial capital letter is used throughout this thesis. This is in line with various campaigns across the world, which argue that the word should be capitalised out of respect, as it is a title that is earned (Courtney, 2020 & Keller, 2020).

This thesis details a small-scale quantitative study of a group treatment for PTSD in a Veteran population using a group adaptation of EMDR called the EMDR-IGTP (the EMDR-Integrative Group Treatment Programme) (Jarero et al., 2006).

EMDR was initially developed in 1989 for treating people on an individual basis (Shapiro, 1989), and it has since been used successfully on an individual basis with military Veterans (Boudewyns et al., 1993; Jensen, 1994; Pitman et al., 1996; Carlson et al., 1998; Devilly et al., 1998, and Ahmadi et al., 2015). EMDR has also been developed as a group treatment after traumatic collective events such as floods, earthquakes or civil war (Jarero et al., 2006; Aduriz et al., 2009; Jarero & Artigas, 2014; Maslovaric et al., 2017). This study will build on this evidence base and test the EMDR-IGTP as a group treatment with military Veterans experiencing symptoms resulting from combat trauma.

In the literature review that follows, the terms trauma, reactions to trauma and PTSD are defined and explored. The definitions are followed by a consideration of frequency of

PTSD in the general population, a definition of Veterans and the frequency of PTSD in the military and Veteran populations.

The literature review then goes on to explore recommended treatments for PTSD and the psychological treatment of Veterans. Finally, it considers the rationale for selecting the EMDR-IGTP protocol as the group treatment used in this study with a Veteran population. EMDR was developed for use in the treatment of individuals suffering with PTSD, so this review considers the evidence for this approach, before arguing for the use of EMDR as a group treatment for PTSD in Veterans, and explaining why the EMDR-IGTP was chosen over other EMDR group protocols.

Finally, the review considers the gap in the literature and why this study fills that gap, as there is evidence of individual EMDR being used with this population but not the use of the EMDR-IGTP. The literature review will set out an overview of this study and then lead into the research design, the methods used, the results and discussion. The literature review will identify the gap in the literature, mainly that there is evidence of individual EMDR with this population but not the use of the EMDR-IGTP. This thesis attempts to fill that gap.

Literature Review

Search Strategy

Searches were carried out using databases including PsycARTICLES, PsycINFO, ISI Web of Knowledge, OVID, CINAHL, Cochrane Collection, Medline, PubMed Central, Science Direct, and Web of Science. Manual searches of established EMDR books were also conducted, and general searches on the internet such as "Google Scholar". The search terms "PTSD", "military", "Veterans", "group", "trauma" and "EMDR" were used in various combinations to identify papers to review. Relevant papers identified by cross-referencing were also included, as well as manual searches of reference lists of articles and professional group email distribution lists. Various terms will now be defined before exploring the results of the literature search in more depth.

Trauma

Trauma is an overarching term and evolved in the late 17th century from the Greek language. It translates literally as "wound". It appears to have two distinct definitions – psychological trauma which leads to someone experiencing a deeply distressing or disturbing experience, and physical trauma which includes physical injuries (Oxford English Dictionary, 2020). This thesis will focus on psychological trauma only, and will start by clarifying the term.

Psychological Trauma

Psychological trauma is associated with a wide variety of undesirable outcomes including schizophrenia (Miller, 2016), addictions (Anderson et al., 2018) and PTSD (Olff et al., 2019). Van der Kolk & Fisler (1995) define psychological trauma as "an inescapably stressful event that overwhelms people's existing coping mechanisms". Pearlman & Saakvitne (1995, p. 60) state "psychological trauma is the unique experience of an event or of

enduring conditions in which the individual's ability to integrate his or her emotional experience is overwhelmed".

The term "psychological trauma" has a wide definition, and the disorder can lead to people suffering in a variety of ways, including post-traumatic stress disorder (PTSD). This review will look at the specifics of the trauma response termed PTSD.

PTSD

Post-traumatic stress disorder (PTSD) is formally defined in two internationally recognised standards which have evolved as each edition has been produced. The 5th edition of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-V) (APA, 2013) defines PTSD as an anxiety disorder caused by stressful, frightening or distressing events, such as a road traffic accident, assault or warfare. It states that a person might relive the trauma by re- experiencing the event via nightmares or flashbacks and might withdraw from activities they used to enjoy.

The World Health Organisation (WHO) use a diagnostic classification system known as the International Classification of Diseases. The latest edition, ICD-11 defines PTSD using six disorder-defining criteria – dissociative flashbacks, nightmares, hypervigilance, exaggerated startle response, avoidance of external reminders and avoidance of thoughts and feelings associated with the traumatic event (World Health Organization, 2018).

The term PTSD was officially recognised in the DSM in 1980 (Friedman, 2013) and has been updated over time. DiMauro et al. (2014) have critiqued these changes, arguing that the broadening of the diagnostic criteria has allowed for increasing inclusiveness, which can lead to an overdiagnosis of PTSD.

This thesis will not explore the differences between these two standards, but aims to make the reader aware of them, as these are used throughout the United Kingdom when diagnosing someone with a disorder, and this thesis is about an intervention to treat PTSD and it is important to understand what is meant by this term.

Counselling psychology and diagnoses

This thesis contributes to the award of professional doctorate in counselling psychology. Counselling psychology, as a profession, has sat outside the medical model from the outset and eschewed the use of psychiatric diagnoses, given that psychological distress or disorders are not diseases with clear biological bases. However, counselling psychologists have always engaged in the design and development of psychological therapies and their evidence bases. This often involves engagement with the psychiatric language employed by funders and commissioners, and the tools which have developed from these frameworks to enable better comparison across populations, such as psychometric questionnaires (Douglas, et al. 2016, p. 12).

This research relies on measures which conform to DSM-V diagnostic criteria, such as PTSD, while holding a critical stance toward the underlying validity of such criteria, as is consistent with a counselling psychology position.

PTSD and Military Veterans

A Veteran is defined by the government as "anyone who has served for at least one day in Her Majesty's Armed Forces (Regular or Reserve) or Merchant Mariners, who has seen duty on legally defined military operations" (Defence Select Committee, 2019).

Military physicians started to see symptoms that affected sleep and mood in Swiss combat Veterans in the late 1600s. Dr Johannes Hofer (Anspach, 1934) looked at case studies of Veterans returning from the civil war, where symptoms included despair and homesickness, as well as sleeplessness and anxiety.

Hacker Hughes, McCauley & Wilson (2019) identified that it was not until the beginning of World War I that British military psychological services started to be developed. This included the setting up of occupational health services which encompassed psychological care, and this was available from initial enlistment of the civilian into the military and throughout their careers.

Research into the mental health of serving military or Veterans was sparse until the early 1990s when "Gulf War Syndrome" was said to have resulted from personnel who were part of the Gulf War in 1991 (Hunt et al. 2014). Larger scale studies were undertaken into the health and well-being of UK Veterans which has led to ongoing research into the mental health of the military (McGeorge, Hacker Hughes & Wessely, 2006).

PTSD is a disorder that is found in military Veterans, but is it common or rare? The incidence in the general population and whether there is a difference with military Veterans will now be examined in this review.

The Prevalence of PTSD in the General Population

Specific statistics as to the prevalence of PTSD in the United Kingdom can be found, and there are varying estimates. Measuring the prevalence of PTSD is complex, as this is not the same as prevalence of trauma. Brewin et al. (2000) & Ozer et al. (2003) found that not all individuals who experience a traumatic event go on to develop PTSD, and of those that do, not all seek or need psychological support. Comorbidity between psychiatric disorders is common, and someone suffering from PTSD might also be co-dependent on drugs and alcohol (Bebbington & McManus, 2020). The Adult Psychiatric Morbidity Survey (APMS)

(McManus, Bebbington, Jenkins & Brugha, 2016) provides data on both treated and untreated psychiatric disorders, but this is in England only for adults aged 16 and over.

Fear et al. (2016) are the authors on the PTSD chapter of the more recent APMS and found that a third of adults (31.4%) in the United Kingdom report having experienced at least one traumatic event in their lives. This differs with the NICE guidelines for PTSD (NICE, 2018) which estimate that three people in every 100 in the United Kingdom will develop PTSD.

Quantifying the prevalence of PTSD in the general population is difficult, especially as not everyone with symptoms of PTSD will seek help, so data that a person has PTSD will be missed. Smith et al (2009) identified that people with PTSD symptoms do not seek help for a variety of reasons including the belief that the symptoms will just go away, feelings of shame, co-morbidity with substance misuse, thinking that treatment won't help and not knowing how to get help.

The Prevalence of PTSD in the Military

The prevalence of PTSD in the general population is difficult to quantify. This study involves a small sub-section of the general population, i.e. Veterans. It is important, therefore, to look at the prevalence of PTSD in this population as this will help inform whether our study is needed.

Smith et al. (2009) looked at the data of 75,156 US military members to assess the population-based prevalence of PTSD symptoms. The data was taken from a 22-year longitudinal study of military personnel. The results found 1,490 respondents (2.1% weighted) reported no diagnosis but reported PTSD symptoms, and 287 respondents (0.4% weighted) reported having a diagnosis of PTSD and were experiencing current symptoms.

The questionnaires were all self-report measures, and the author does acknowledge that some of the data might have been increased due to the need for access to benefits etc. The data is also unclear as to the specific number of participants who saw active deployment so was the PTSD being measured for combat PTSD or perhaps PTSD from earlier events?

A UK meta-analysis by Rona et al. (2016) reviewed the database at the King's Centre for Military Health Research publications from 2006 to 2016. This included 21,746 deployed personnel from nine studies. The meta-analysis did find evidence for an association with increasing psychological distress since returning from deployment.

A more recent report (Ministry of Defence, 2020) states that the prevalence of PTSD among UK Armed Forces remains low, at two in 1,000 personnel. These figures were collected from data of serving personnel presenting at military Departments of Community Mental Health (DCMH).

There could be a variety of reasons for these low figures (MOD, 2020). It is known that it can take time for military personnel to reach out for help (Aikins et al 2020). The data in the MOD report was from serving personnel who might not have sought help while serving, due to issues around stigma or concern about possibly being downgraded or discharged (Rona et al. 2006). Stigma was identified in a recent report and campaign, "Cut the Clock," by the charity Help for Heroes (Help for Heroes, 2018) which highlighted this as often being a reason for a delay in Veterans seeking help which follows on from other research around stigma and the military (Murphy & Busuttil, 2015 & Sharp et al. 2015). Other reasons for delayed help seeking is that PTSD can take time to establish (Rosen et al. 2011 & Hines et al. 2014) and a person might think that it will just go away or they are too frightened by the symptoms to seek help as they are afraid of what they might have.

The mental health of military Veterans, particularly those suffering from PTSD, has been of recent concern, with Palmer et al. (2019) identifying Veterans as a population that struggled with PTSD due to factors other than combat trauma, including class membership and childhood adversity. The needs of Veterans have also been brought into the political spotlight in the UK, with the royal family (Prince William and Prince Harry) championing their cause. The UK Armed Forces Covenant (MOD, 2000) captures the mutual obligations between the nation and its armed forces. It outlines the importance of Veterans accessing therapy and other social systems, e.g. housing, medical support, jobs etc, as a priority.

The British armed forces currently do not screen new recruits to detect possible risk of them developing mental health problems, including identifying any Adverse Childhood Experiences (ACEs) that might make them more vulnerable to increased mental health difficulties (Busuttil, Hacker Hughes & Kitchiner, 2017, p. 5).

Murphy & Turgoose (2019) identified that 44% of Veterans in their study (N = 178/403) reported experiencing six or more adverse events in childhood with participants reporting drug and/or alcohol misuse or domestic violence between parents and found that PTSD was related to high childhood adversity. This ties in with an earlier study (Iversen et al, 2014) who found that PTSD symptoms in armed forces personnel were associated with lower rank, lower educational attainment, and a history of Adverse Childhood Experiences (ACEs). Carroll et al. (2017) found that more than 80% of a sample of Veterans who had served in the Iraq and Afghanistan conflicts had experienced at least one ACE (Adverse Childhood Experience), and about 40% of the participants had experienced at least four or more traumatic events over their lifetime.

The above illustrates the difficulty in quantifying the amount of military or Veterans with PTSD, with studies showing low rates and other studies showing higher figures. The studies also show the complexity of the PTSD when a Veteran might eventually seek help. This is important as this pilot study will be treating PTSD related to military service and it

is highly likely that the participants will have accrued other traumas too so might be quite complex in their presentation.

If Veterans are suffering with PTSD, then what is the economic cost of PTSD in this sector of the population?

Economic Cost of PTSD in the General Population

Any healthcare system must understand the economic burden of a disease, as this can help set policies for research and service provision (Rupp & Sorel, 2001). Various papers have been identified looking specifically at the economic cost of PTSD but there were only limited studies available.

Ferry et al. (2014) looked at the burden of PTSD in Northern Ireland following the end of the "Troubles" and found that PTSD cost 16.8% of the public purse, which is a considerable amount. Bunting et al. (2012) report that, in Northern Ireland, patients wait an average of 22 years after the onset of mental health difficulties before seeking professional help. It could be hypothesised that when a person does seek help for their PTSD, the interventions take longer to work due to the complexity of the PTSD by the time that help is sought?

Buljan (2015) conducted a larger study looking at the social and economic costs of PTSD following the London bombings in July 2005. She surveyed 230 people who were attending NHS services in London who had been affected by the bombings. A total of 205 people had been directly involved in the bombings and, of those, 179 had witnessed a serious injury to others or a death. She found that direct costs included health service usage (private, statutory and voluntary sectors) and medication costs. Indirect costs included things like sick leave, unemployment and reduced work hours. Those indirect productivity

costs were £777,596, £544,627 and £63,932 respectively. The range of sick leave was from 1 to 1,112 days lost, and 29 people in her sample of 23 respondents reduced their work hours. Total unemployment ranged from 3 to 320 weeks.

Based on these studies, it can be said that the economic cost of PTSD in the general population is recognised as quite high, and this provides a rationale for PTSD to be taken seriously and treatment to be offered. However, what about the economic cost of PTSD in the military and Veteran population?

Economic Cost of PTSD in the Military

The economic burden of PTSD in the military population is similarly hard to quantify.

Wang et al. (2016) carried out a study in the USA that focused on direct healthcare costs such as stays in hospital, outpatient visits and medication costs associated with a diagnosis of PTSD. They reviewed a database of Veterans diagnosed with PTSD (n=492,546) and found that hospital inpatient costs averaged $5,486 per person, average outpatient treatment was $10,057 per person and medication costs $1,207 per person.

In summary, literature has been identified supporting the identification of only a small percentage of diagnosed PTSD in the military, but a diagnosis of PTSD seems to have a disproportionate impact on public expenditure. Again, there a gap in research with no studies being identified specific for the economic burden of PTSD in Veterans in the UK. Let us now look at how PTSD can be treated and whether a psychological treatment is cost effective.

Cost effectiveness of psychological treatment of PTSD

PTSD can have a large economic burden. The NICE guidelines for PTSD (2018) recommend both pharmacological and psychological treatments for PTSD. This review will now examine whether a psychological treatment is cost effective as the pilot study is using a psychological intervention.

A search of the literature identified a recent study by Mavranezouli et al. (2020) which used a decision-analytic model to compare costs and quality adjusted life years (QALYS) of ten interventions and no treatment for adults with PTSD in England. EMDR was found to be the most cost-effective intervention, although they recognised that TF-CBT had the largest evidence base. EMDR is being used in this pilot so it is useful to know that it is cost effective.

Overview of Psychological Treatment of PTSD

Various international bodies issue guidance on psychological treatment for PTSD. This section will look at the main guidance found in the literature review.

The National Institute for Health and Care Excellence (NICE) provides guidance and advice on what treatments to offer for a variety of disorders by collating the evidence base and producing guidelines that the NHS and other health bodies adhere to when offering treatment choices. The NICE guidelines for PTSD (NICE, 2018) have recently been updated and recommend cognitive behaviour therapy (CBT) as the main psychological treatment choice. EMDR is also recommended, but it has now been downgraded, with advice to offer

this as a secondary choice to CBT. The guidelines specifically advise against using EMDR for treating combat-related PTSD. This is significantly different to the previous NICE guidelines for PTSD (NICE, 2005), which recommended CBT and EMDR as psychological treatments on a par to one another and recommended both CBT and EMDR for treating combat-related PTSD. The NICE guidelines only recommend individual psychological treatment for PTSD, and group treatment options are not recommended, but this is mainly due to a very poor evidence base. This change in the NICE guidelines has had ramifications across the United Kingdom, particularly in the NHS (National Health Service) and military health departments, as EMDR can no longer be offered as first choice of therapy for combat-related trauma within organisations that offer treatment based on NICE guidelines.

The NICE guidelines are often criticised as they are reliant on randomized control trials (RCTs) and dismiss other evidence. RCTs are often seen as the gold standard for research as interventions concerned with treatment can be efficiently and objectively tested (Hariton & Locascio (2018). Randomized control trials (RCTs) are essential to demonstrate the efficacy of interventions, but often are insufficient for understanding implementation of interventions in authentic practice settings (Schliep, Alonzo & Morris, 2018). RCTs often demand tight control of the research environment and can be seen not to be in the real world as it is often hard to implement the specific design in general care. There are problems with this. Balas & Boren (2000) found that after 17 years only 14% of health care research was adopted into day to day clinical practice. This was because of weak external validity in the original evidence-based intervention – as the intervention and the controlled context did not reflect real world clinical practice.

Watkins, Sprang & Rothbaum (2018) highlights that the DSM-V definition of PTSD does not discriminate who has PTSD or not – but rather it lists the criteria for PTSD. The term “combat Veteran” is not a diagnosis, so how can NICE be excluding Veterans? How

many of the RCTs that NICE reviewed perhaps had Veterans as the participants, perhaps where a study was on a general population of people with PTSD?

This study is not an RCT, but it is significant as it is a pilot study and, if effective, could lead to more robust studies such as a RCT. The timing of this study is crucial, as it will aim to extend the literature by recruiting Veterans who have combat-related trauma.

The ISTSS (International Society for Traumatic Stress Studies) issued guidelines for treating PTSD and puts EMDR on a par with CBT. It excludes fewer studies than NICE and does not focus on RCTs in its review, unlike NICE (Forbes, Bisson, Monson and Berliner, 2020).

WHO, like NICE, issues guidance on various illnesses and has guidelines for treating PTSD (WHO, 2018). This recommends both CBT and EMDR on an equal basis for treatment of PTSD. Again, this contradicts the recent NICE guideline for PTSD, and seems to be because it also excludes fewer studies than NICE and includes studies that are not purely RCTs.

A recent meta-analysis by Mavranezouli et al. (2020) undertook a systematic review and network meta-analysis of psychological interventions for adults with PTSD. They included 90 trials, 6,560 individuals and 22 interventions. They found that EMDR and trauma-focused CBT appear to be most effective at reducing symptoms and improving remission rates in adults with PTSD. They are also effective at sustaining symptom improvements beyond treatment endpoint.

A Cochrane review of psychological treatment for PTSD (Bisson & Andrew, 2013) also reviewed the effects of psychological therapies for the treatment of adults with chronic PTSD. A total of 70 studies were included, involving 4,761 participants. The review found that individual Trauma-Focused Cognitive Behavioural Therapy (TF-CBT) and EMDR did better than waitlist/usual care in reducing clinician-assessed PTSD symptoms. There was some evidence that TF-CBT and EMDR are superior to non

TF-CBT between 1 to 4 months following treatment, and that overall , EMDR and TF-CBT are more effective than other therapies. Although a large amount of studies were included in the review, the authors found there were significant methodological issues in some of these studies, and sample sizes were often small and some studies were underpowered with limited follow-up data, so it was hard to reach a conclusion as to the long-term effects of the treatments.

Another systematic review and meta-analysis of psychological therapies for PTSD in adults (Lewis et al., 2020) followed Cochrane Collaboration guidelines for reviewing and identified 114 RCTs of 8,171 participants were included. The review identified more emerging therapies being used for treating PTSD, including variants of CBT, e.g. cognitive processing therapy (CPT), prolonged exposure (PE), cognitive therapy. This review also included group treatments, but the only research they identified for this review was CBT with a trauma focus. The review recommended CBT and EMDR equally and this review informed the most recent ISTSS guidelines (Forbes, et al 2020).

In summary, although the NICE guidelines recommend CBT as the treatment of choice, there is a consistent evidence base putting EMDR on a par with CBT as a psychological treatment for PTSD.

Literature on psychological treatment of the military and Veterans

The literature review revealed a wealth of literature on various psychological treatments for Veterans and some of the meta-analysis are cited below.

Haagen, Smid, Knipscheer & Kleber (2015) carried out a meta-regression analysis of 57 studies of recommended treatments for Veterans, finding exposure therapy and cognitive processing therapy more effective than EMDR. The meta-analysis also included group treatment (but not EMDR), and by comparing this to individual work, they found that group treatment was not as effective. They did find that if the treatment (individual or

group) focused on the trauma (rather than perhaps looking at relaxation techniques or similar), then this predicted improvement. The analysis also found that demographic variables such as age, gender, ethnicity, marital status, work and military status did not make any difference to the treatment efficacy. Most of these studies were US based (93%), and none were from a UK, so there is a question as to whether their findings would generalise with a UK population.

Kitchiner et al (2019) carried out a systematic review and meta-analysis of the treatment of active duty military and Veterans with PTSD and identified 24 studies with 2386 participants. CBT with a trauma focus (CBT-TF) was found to have the largest evidence of effect in reducing PTSD symptoms (10 studies) and group CBT-TF was less effective compared to individual CBT-TF (one study). They identified four studies using EMDR for individual treatment and found that this was not as effective compared to wait list/usual treatment. Systematic reviews can be problematic**.** Kitchiner et al's review (2019) neglects two studies using EMDR that were found in our review. Boudewyns et al, 1993 & Pitman et al. 1996 both use EMDR with combat Veterans. It is not stated why these studies are not included but it could be hypothesised that it was to do with the lack of participants (these studies are discussed later in more depth). However, this systematic review does state that given the lack of research (but including evidence from other sources) it would not be unreasonable to consider EMDR for individuals who do not respond to CBT-TF or are unable to tolerate it. Again, this review does not include studies using group EMDR with active military personnel or Veterans as none have been done which makes this pilot study more important.

The next section will turn to look more closely at EMDR as a treatment for PTSD, as in this pilot study.

EMDR as a Treatment for PTSD

EMDR is the treatment of choice for this pilot study. It was developed by Francine Shapiro as an individual psychotherapy (Shapiro, 1989) and is now recognised as a treatment for PTSD in many countries (Bleich et al., 2002; CREST, 2003; INSERM, 2004; Bisson et al, 2013; WHO, 2013; American Psychological Association, 2017, VA/DoD, 2017 & NICE, 2018.

Shapiro (1995) created EMDR as an eight-phase protocolised treatment built on the assumption that distress following traumatic events is caused by unprocessed traumatic information. The eight phases are very briefly described below as follows.

1. Client History – Identify target memories.
2. Preparation – Prepare the client appropriately for the therapy.
3. Assessment – Fully assess and evaluate target memories, feelings, beliefs etc.
4. Desensitization – Use eye movements or other forms of bilateral simulation to process memories.
5. Installation – Install positive beliefs about self to replace negative beliefs and affects associated with memories.
6. Body Scan – Eliminate any remaining physiological symptoms with further bilateral stimulation.
7. Closure – Return client to safe calm equilibrium as session ends.
8. Re-evaluation – Check that all aspects of memory have been fully processed.

EMDR is based upon a clearly articulated theory – the AIP (Adaptive Information Processing) model – to account for the change process and

mechanisms in the psychotherapy Shapiro (1995 & 2018).

The AIP model uses the patient's own resources. It assumes that the human brain can reprocess the dysfunctionally stored information to complete integration. If the stressful information has been processed incorrectly, then the memory is stored in a raw, unprocessed and maladaptive form within neural networks. A distressing incident is then unable to connect with other memory networks that hold adaptive information. EMDR provides the tool needed to reconstruct the disturbing feelings associated with a traumatic memory, by allowing adequate processing of the memories themselves. If a person focuses on the memory directly, then it becomes possible to not only change the way the memory is stored, but also the feelings associated with that memory. The AIP model hypothesises that dysfunctionally

stored memory forms the basis of future maladaptive responses. An example could be the exaggerated startle response when someone with PTSD hears a firework that might sound like a gun. Solomon & Shapiro (2008) add that activation of these memories, even years after the event, can lead to a plethora of symptoms, including intrusions that can be overwhelming and debilitating for the sufferer.

The AIP model conceptualises EMDR as working directly with cognitive, affective and somatic components of memory, to forge new associative links with more adaptive material. In EMDR, the client simultaneously focuses on the image of the event, the associated negative belief and the physical sensations, and these components of EMDR seem to forge new neural connections in the brain, thus initiating processing and helping to incorporate new experiences into the existing memory (Shapiro, 2018).

Haze (2017) states that one of the key principles of the AIP model is that it predicts that dysfunctionally stored, and not fully processed, memories are the cause of mental distress. Shapiro (1995; 2018) states that the AIP model describes the processing system as one that incorporates new experiences with existing memory. It suggests that disturbing experiences in the past might continue to induce feelings of stress, because the memory itself was initially processed inadequately. As such, the unprocessed memory, with conflicting emotions, thoughts and sensory perceptions, remains frozen, and the memory is unable to assimilate with other memories. This results in a memory that induces negative feelings, causing the symptoms of PTSD or other mental distress. If bilateral stimulation of the brain (usually in the form of eye movements) is initiated while the client focuses on those images, thoughts, emotions or physical symptoms, then the memory networks can be accessed and the processing and release of the maladaptively stored material occurs.

Many studies have examined these proposed mechanisms of change within EMDR. Schubert & Lee (2009) identify various hypotheses on the mechanisms underlying EMDR and the AIP model, including (a) orienting response, (b) REM-like state, (c) increased hemispheric communication, and (d) working memory. They also found that a physiological state akin to REM sleep is seen in EMDR, which may aid the transfer and integration of memories. Elofsson, von Schèele, Theorell & Sondergaard (2008) supported this by identifying that eye movements induce a relaxation response that decreases stress levels, which makes processing the trauma memory physiologically and neurologically more manageable for the client.

In summary, the AIP model asserts that the core elements of the distressing experience, including external stimuli (images and sounds) and internal stimuli (affect, thoughts and body sensations), will not have been adequately processed and integrated. This means that any present-day stimuli resembling the original event can trigger the distressing material, compromise functioning, and potentially give rise to distress. EMDR aims to activate the neural network in which the inadequately processed memory is stored, in order to reinitiate information processing and allow adaptive resolution of the traumatic memory (Schubert & Lee, 2009; Shapiro & Laliotis, 2011).

The above highlights some evidence for the theories of change underlying EMDR, but more work is needed in this area**.** Meanwhile, an abundance of empirical evidence has been published that supports the efficacy of EMDR for the treatment of PTSD symptoms in traumatised adults (Bleich et al., 2002; CREST, 2003; INSERM, 2004; Bisson et al., 2013; WHO, 2013; American Psychiatric Association, 2017 & NICE, 2018).

EMDR in the 21st century still adheres to the standard EMDR protocol as set out in Shapiro's seminal text (Shapiro, 1989). She recognised that the standard EMDR protocol can

be adapted for new contexts and needs (Shapiro, 2001). EMDR is often a preferred treatment for PTSD over trauma-focused CBT, as all the precise details of the traumatic material do not need to be verbalised in the treatment, which can be very difficult for the client. This could explain why Jaberghaderi et al. (2004) found EMDR to be more effective for visual trauma memories. Dropout rates during EMDR therapy are lower compared with trauma-focused CBT (NICE, 2005). Treatment is often shorter (Ironson et al, 2002), and clients also prefer the lack of homework compared with CBT (Ho & Lee, 2012).

It can be seen from the above that there is an evolving literature base for the use of EMDR.

EMDR and the Military

As discussed, the revised NICE guidelines for PTSD (2018) specifically exclude EMDR as a recommended treatment for combat-related trauma, mainly due to lack of evidence. However, the WHO guidelines for PTSD (WHO, 2015) and the ISTSS guidelines (Forbes, Bisson, Monson and Berliner, 2020) do not make this exclusion. Literature specifically for on the use of EMDR with the military will be examined next in this review.

A search of the literature has identified various studies using individual EMDR with the military. Some of these studies will now be outlined, including their weaknesses.

Boudewyns et al. (1993) ran a pilot study that randomly assigned 20 Vietnam combat Veterans from a special inpatient PTSD programme to one of three conditions – (1) Eye Movement Desensitisation (EMD) (a pre-cursor to EMDR) (n = 9), (2) Exposure Control (n = 6) or (3) wait list (n = 5). The first group received two 90-minute sessions of EMD, the second group received two 90-minute sessions during which they imagined the trauma but without the eye movements, and the third group was the control condition (wait list).

Treatment was carried out within a 14-day period. The participants were only treated for their "most disturbing memory" and it was recognised that they had a variety of traumatic memories.

Subjects were assessed at pre- and post-treatment on the Impact of Event Scale (Horowitz, Wilner & Alvarez, 1979), the Mississippi Scale (Keane, Caddell & Taylor, 1988), and the Clinician Administered PTSD Scale (Blake et al., 1995). Physiological measures were also obtained at pre- and post-treatment. At both pre- and post-treatment, two sets of physiological recordings were taken – when "at rest" and when presented with a "trauma"-related cue. For the "trauma"-related cue at pre-treatment, subjects recounted their traumatic memory of the event and this account was tape-recorded. This tape was then replayed to the subjects while their physiological recordings were taken. At post-treatment, the "trauma"-related physiological measures were obtained while playing the same tape. These measures included heart rate, electromyographic response, skin conductance, and hand temperature. Subjective Units of Distress Scale (SUDS) levels were also recorded. The mean drop in SUDS for the EMD group was from 7.4 to 3.4 across the two sessions and 8.0 to 6.4 in the EC group. Results of a direct comparison between these two SUDs-level changes found the EMD group to have a significantly greater drop in SUDs when compared with the EC, t(\5) = 2.57; $p < .03$). No significant difference in changes over time was found for either EMDR or imaginal exposure on any of the measures relating to PTSD pathology. A pre- and post-therapy-repeated-measures ANOVA yielded no significant effects for any of the psychological measures. This study was carried out not long after EMD was developed, so helped forming some of the early evidence base for EMDR, with Shapiro having developed the concept in 1989 (Shapiro, 1989).

It was hypothesized that the lack of statistical change in the questionnaires was caused by the subjects overreporting symptoms. Most of the subjects were receiving or had applied for disability pension and it was in their interests for the scores to remain high.

Another study, only a year later (Jensen,1994) looked at 25 Vietnam combat Veterans with PTSD who were randomly assigned into either an EMDR treatment condition (n = 13) or a control condition (n = 12) of no extra treatment. Results found that SUDS levels were reduced significantly for the EMDR group compared with controls but that none of the other outcome measures, including the Structured Interview for PTSD (SI-PTSD) (Davidson et al., 1989), a Goal Attainment Scaling measure (Kiresuk & Lund, 1979)) and the Mississippi Scale (Keane et al., 1988), showed significant change. Between-group differences on SUD, VoC, and SI-PTSD post-test scores were assessed using analysis of covariance (ANCOVA).

On the SI-PTSD post-test, the mean of the EMD/R group (N = 13) did not differ significantly from the mean of the control group (N = 12), $F(1,22) = 2.92$, $p = .102$.

On the SUD-post-test, the mean of the EMD/R group (N = 11) did differ significantly from the mean of the control group (N = 8), $F(1,16) = 5.19$, $p = .037$. This indicated that the EMD/R group experienced reduced in-session anxiety upon exposure to traumatic cues in comparison with the control group.

On the M-PTSD post-test, the mean of the EMD/R group (N = 13) did not differ significantly from the mean of the control group (N = 12), $t(23) = .93$, $p = .361$, two-tailed. This indicated that EMD/R subjects were no more successful than control subjects in attaining overall PTSD symptom resolution.

This study is consistent with the Boudewyns et al. (1993) study, with subjects generally not showing improvement on standardised measures assessing PTSD. Unfortunately, this study of chronic subjects used psychology interns as therapists, offered

only two EMDR sessions, had small cohort sizes, no follow-up data, and no control for treatment being given outside the study. Again, interns were probably used as, in 1994, it can be hypothesized that not many people were fully trained to deliver EMDR at that time, with EMDR having only been developed in 1989 (Shapiro, 1989).

Boudewyns & Hyer (1996) randomly allocated subjects in America with combat-related PTSD to between five and eight sessions of one of three conditions: an EMDR group (n=21), an exposure control (EC) (n = 18) group, and no imagery control group (C) (n = 22). The EMDR group received between five and seven sessions of EMDR, as did the EC group. The difference between the EC and EMDR groups was that the exposure subjects did not engage in eye movements during individual therapy, but rather kept their eyes closed and engaged in continued imaginal exposure during that time. Otherwise, there were no differences between the groups, and the EC condition could be described as EMDR without the eye movement. Subjects in group C received eight sessions of standard therapy, and although this did not involve exposure therapy, they did discuss traumatic material at times. All treatment took place over six weeks. There were 10 therapists involved in the study, all having been trained by trainers approved by Francine Shapiro, and all sessions were videotaped, with two being scored for conformity to the technique. Although subjects in group C received no exposure therapy they did, at times, discuss traumatic material.

Outcome measures included (1) the Clinician Administered PTSD Scale (CAPS-1) (Blake et al., 1995), (2) the SUDS, (3) the Impact of Events scale, and (4) the Profile of Moods scale (anxiety subscale only). Psychophysiological responses were also used as outcomes. These included frontalis EMG, skin conductance, heart rate, and blood pressure.

For the SUDS, both EMDR and EC subjects dropped significantly from pre- to post-therapy $f(1,38) = 36.67$; $p < 0,0001$. The EMDR SUDS levels dropped from a pre-therapy

high mean of 6,68 to a post-therapy low mean of 3.09, while EC means went from 7.9 to 4.38. For both the CAPS all symptoms category and re-experiencing category, all three groups dropped significantly pre to post, F(l,61) = 47.74; p < 0,0001; F(l,61) = 33,10; p< 0,0001 respectively. This drop was both statistically and clinically significant and is important in that it indicates positive change in symptoms is possible in this otherwise chronic population. The results revealed the EMDR and EC treatment groups to be effective in reducing symptomatology on most measures, but without an intergroup difference.

Carlson et al. (1998) compared EMDR (n = 10) with biofeedback-assisted relaxation (n = 13) v treatment as usual (n = 12). A randomized controlled outcome design was used, and all participants were combat Veterans with a diagnosis of PTSD. They were treated with either (a) 12 sessions of EMDR (n = 10) (b) 12 sessions of biofeedback-assisted relaxation (n = 13) or (c) routine clinical care serving as a control (n = 12). After 12 sessions of EMDR therapy, 78% no longer met the full criteria for PTSD.

The therapists were trained in EMDR prior to the study and sessions were audiotaped for treatment integrity checks. The same therapists who delivered the EMDR also delivered the biofeedback. Subsequent comparisons showed that participants in the EMD group had significantly lower Mississippi scores at post-treatment relative to the CON group, t(32) = 2.36, p c .05, d = 1.01, and at post-treatment and follow-up relative to the RXT group, t(32) = 2.55, p c .05; d = 1.07, and t(16) = 2.15, p c .05; d = 1.01, respectively.

The Impact of Event Scale revealed trends in the Intrusion and Avoidance subscales, as well as the total score, paralleling those of the other psychometric measures of PTSD. Most notably, means for the EMD group were lower than those of the other groups at post-treatment and at follow-up, apart from the avoidance subscale, on which the CON group was slightly lower than the other two groups at post-treatment. On all measures, significant main

effects were obtained, Intrusion: $F(1, 29) = 26.51$, $p < .0001$; Avoidance: $F(1, 29) = 12.93$, $p < .0003$; and total score: $F(1, 29) = 24.70$, $p < .0003$, reflecting overall decreases in scores from pre-treatment to post-treatment, undifferentiated by condition. There was 100% retention in the EMDR condition. Effects were maintained at follow-up. This is the only randomized study to provide a full course of treatment with combat Veterans, rather than a couple of sessions that have been identified in earlier studies with combat Veterans. Research has shown that clients with multiple traumas and/or complex histories of childhood abuse, neglect and poor attachment may require more extensive therapy, including substantial preparatory work in phase two of EMDR (Shapiro, 2001; Korn & Leeds, 2002; Maxfield & Hyer, 2002).

Carlson, Chemtob, Rusnak, Hedlund, and Muraoka (1998) returned to comparing EMDR against poorly supported, even inert, comparison treatments by randomly allocating 35 combat Veterans with PTSD to either 12 sessions of EMDR, biofeedback-assisted relaxation, or routine clinical care. Unsurprisingly, while all subjects improved, the subjects in the EMDR condition outperformed the subjects in the other two conditions on several self-reports, psychometric, and standardized interview measures. Treatment gains within each condition were maintained to 3-month follow-up. Carlson et al. also claimed that these results were maintained to 9-month follow-up, as measured by the CAPS. However, at this assessment period, only eight EMDR and four biofeedback participants completed the questionnaire. The authors then applied t-tests to the data, as opposed to more conservative nonparametric testing usual with such an exceptionally small sample. Such an approach greatly increases the likelihood of a Type I error. Furthermore, these *t* tests were applied using *one*-tailed significance testing, which also increases the likelihood of finding a significant difference. Nine of these one-sided *t* tests were applied to the data without any

correction, seven of which were described as significant. However, even just applying two-sided tests would have meant that only three would have been significant.

It would be interesting to see the number that remained significant if Mann-Whitney *U* tests had been applied with Bonferroni corrections. Moreover, the data of one EMDR participant was removed from the analyses due to "serious concerns about the fidelity of responses" (p. 18). One can, therefore, conclude very little from this follow-up. Either way, the large effect sizes on measures of PTSD at post-treatment ($d > 1.1$) and 3-month follow-up ($d > 1.5$) have not been obtained in other studies using the subjects from the same population (e.g., Devilly et al., 1998 and Devilly & Spence 1999; Pitman et al., 1996), although whether this difference is due to the length of treatment provided remains unclear. Although this study did use fidelity checks for the EMDR condition, it is surprising that such checks were not also applied to the biofeedback condition.

It should also be stressed that EMDR was the only therapy procedure in this study that included imaginal exposure; an already validated component in the treatment of combat-related PTSD (e.g., Keane et al., 1989). These results, therefore, are again uninstructive regarding the relative efficacy of EMDR compared with an empirically and clinically supported alternative approach. Moreover, the control group used did not control for the theorised active components of the technique. However, this study did provide a complete treatment timeline (12 sessions) and the results are probably more reflective of EMDR's long-term use potency with Veterans than Shapiro's (1989a) original, and un-replicated, claim of a one-session cure for any traumatic memory.

Another study (Devilly, et al.,1998) randomly assigned 51 war Veterans with PTSD to one of three conditions: two sessions of EMDR, an equivalent procedure without the eye movements using a flashing light (Rapid Eye Dilation Desensitization and

Reprocessing [REDDR]), or a Standard Psychiatric Support control condition. Various standardized assessment questionnaires were administered at every session, including an assessment controlling for treatment credibility. A 3-month follow-up was conducted by mail to reduce possible demand effects. Psychophysiological assessment was performed by taking blood pressure and heart rate readings when the participants were relaxed and when imagining their trauma pre-, during, and post-treatment.

The results indicated an overall significant main effect of time from pre- to post-treatment, with a reduction in symptomatology for all groups. However, no statistically significant differences were found among the groups. Participants in the two treatment conditions, however, were more likely to display reliable improvement in trauma symptomatology than subjects in the control group. By 6-month follow-up, reductions in symptomatology had dissipated and there were neither statistical nor reliable differences between the two treatment groups. Overall, the results indicated that, with this war Veteran population, improvement rates were less than had been previously reported. Also, where improvements were found, eye movements were not implicated as the mechanism of change. Rather, the results suggested that other, nonspecific or therapeutic processes accounted for any beneficial effects of EMDR. A major criticism of this study is that because only one Veteran agreed to be videotaped, fidelity ratings could not be procured. Also, this population has a more complex presentation, with multiple comorbid conditions, and may have required longer-term intervention. However, this does not explain Shapiro's (1989) original single-session results that included "veterans".

A possible confound within the Carlson et al. (1998) study, however, is that assessment was obtained during "face-to-face" interview. Although the interviewer was blind to subject treatment allocation, demand characteristics are still inherent to this method of data collection. Both Carlson and Chemtob are known and vociferous advocates of EMDR. When

results such as theirs appear to be at odds with multiple other research groups working with the same population type, one has to consider the possibility that researcher allegiance and experimenter demand effects may have played a role in the derived outcome (see Devilly, 2001, for a discussion of this). A postal follow-up may minimize this effect.

The original one-session cure (Shapiro, 1989) likewise mutated slowly over time to the eventual claim that five sessions for the general population and 12 sessions for Veterans were necessary (Shapiro, 1999). This claim was made even though both subject populations had been included in the original 1989 study.

Rogers et al. (1999) treated 12 Vietnam Veterans with either one session of EMDR or one session of exposure therapy with each intervention administered by different therapists. All participants were in-patients undergoing treatment for combat-related PTSD who met criteria for PTSD according to the Clinician Administered PTSD Scale. Comorbid diagnoses of psychosis, dissociative disorder or personality disorder, or a previous history of exposure therapy or EMDR treatment, acted as exclusion criteria. Dependent variables were obtained by an assessor blind to condition allocation and included physiological reactivity (blood pressure and heart rate both when imagining the trauma and at rest, similar to Devilly et al., 1998), SUD levels, and the Impact of Event Scale (IES). The results displayed a trend for EMDR to produce more improvement at post-treatment on all self-report measures, but there was no difference between groups on the physiological measures. In fact, on subjective ratings, the means showed a deterioration of the exposure group over time. No follow-up data was reported.

Interpretation of these results is difficult due to the limitations of the study - a small sample size, concurrent inpatient treatment, an absence of treatment integrity ratings, and the use of only one standardized outcome measure (IES). Moreover, exposure was applied

idiosyncratically and within only one domain (imaginal) without an in vivo aspect. Thus, the study does not provide an accurate assessment of the efficacy of exposure therapy, especially since the exposure subjects were significantly worse at intake on self-monitored intrusions and means on all pre-treatment measures. In fact, SUDS levels and self-rated intrusions for subjects in the exposure condition worsened over time (although not significantly), suggesting that the therapists sensitized rather than desensitized participants. For exposure therapy to work, and to be consistent with the theoretical underpinnings of the approach, between-session habituation is required, not just (or even) within-session habituation (Jaycox et al., 1998).

The authors state that within this one session the participants were first given a rationale for the intervention (an aspect usually taking 60 minutes in itself) and then taught a "quick relaxation method" (an aspect usually taking at least 30 minutes). Furthermore, the 35-minute average exposure time is short of the 50 minutes recommended by other researchers. Consequently, habituation, a process consistently related to successful behaviour therapy outcome (Jaycox et al., 1998), was unlikely to have been achieved. Applying a single 60- to 90-minute session of this type of therapy as an intervention technique, within either research or general practice, to treat any subject sample, raises ethical issues that lie outside the boundary of this paper. However, until this study, treatment adherence emphasis had been placed upon the EMDR procedure. The Rogers et al. (1999) study emphasizes the need for training and adherence to all CBT methods, not just newly developed techniques.

Ahmadi et al. (2015) had two intervention groups and one control group. He compared a new treatment called REM desensitization to EMDR and a wait list. Taking part were 33 men, who were all active duty personnel in Iran, with results showing that intrusive thoughts were more likely to improve with the REM condition than EMDR ($p = 0.03$), but

depression improved more with EMDR ($p = 0.03$). Death anxiety was also measured, and this also reduced more with EMDR ($p= 0.05$). The RCT was aimed at evaluating the REM, and a lot of the discussion relates more to the REM condition, but the study does show some significant improvements for using the EMDR.

The papers identified using EMDR with a military population show that early studies tended to use no or few standardized outcome measures, incorporated no fidelity checks, and were contaminated by numerous methodological flaws, but a lot of these early papers were written in the early days of EMDR, when the therapy itself was still being developed. They also show that more controlled research with combat-related PTSD is needed.

Group EMDR

The intervention in this pilot study is for use in a group. Shapiro's initial work designed EMDR as an individual psychotherapy, and most of the research on EMDR is as an individual treatment (WHO, 2013; NICE, 2018). However, there are emerging studies evaluating EMDR as a group therapy. Literature on the use of EMDR with PTSD in a group format will now be examined.

Haagen et al. (2015) and Kitchiner et al. (2019) systematic reviews identified no group treatment using EMDR but their inclusion criteria for studies stated that the participants had not have a diagnosis of PTSD with a duration of three months or more. Most of the RCTs using group EMDR are as an early intervention (sometimes a few days after a disaster such as Maslovaric et al. 2017). Further, these systematic reviews were for interventions with the military and Veterans only and the group EMDR protocols have not been used with a military population.

Various protocols have been developed for use in a group using EMDR. Jarero et al, (2006; 2009; 2010; 2012 & 2014) developed the first protocols for group EMDR, calling it the EMDR-IGTP (EMDR-Integrative Group Treatment Protocol). Jarero et al (2006) developed it initially following an earthquake in Mexico City. Jarero and his wife were faced with a large population of people who were distressed and there were insufficient practitioners to offer one to one therapy. Adapting his wife's butterfly hug (Artigas et al. 2000), and using drawings as part of the protocol, the EMDR-IGTP was created. The EMDR-IGTP was initially used as an early treatment strategy following large-scale disasters such as earthquakes. Drawings were used in the intervention, as a lot of the population being treated were children. Jarero et al. (2008, 2011 & 2012) then used this protocol with adults and had the same positive results. Jarero (et al., 2015 & 2016) then adapted this protocol for use with cancer patients and again the results were good. Zaghrout-Hodali et al. (2008), Aduriz et al. (2009) and Maslovaric et al. (2017) adapted Jarero's work with other large-scale disasters, and again had good results. It has also been used with carers of dementia patients (Passoni et al., 2018), and has more evidence base than other group EMDR protocols that have started to emerge in the literature.

Elan Shapiro developed another group protocol using EMDR – the G-TEP (Group Traumatic Episode Protocol). This has been used in RCTs with refugees fleeing traumatic situations, so can be also seen as an early intervention. The published research using G-TEP has major issues, with large numbers of dropouts due to participants being under constant threat (Acarturk et al., 2016, Lehnung, Shapiro, Schreiber & Hoffman, 2017 & Yurtsever et al. 2018). Despite this, the Acarturk et al. (2016) study found a significant difference between the EMDR treatment group and wait list control ($p = < 0.001$).

Limitations of these studies

The DSM-V states that PTSD can only be diagnosed when a person has had symptoms of PTSD for a minimum of 1 month (APA, 2017). Group treatments have shown promising results, but some of the participants (particularly in early intervention treatment groups) will not have fulfilled the diagnostic criteria for PTSD, as most of the treatment was carried out within days of the event happening and they have mainly involved large populations following shared traumatic events, such as earthquakes. Here, the treatments have been an "early intervention", i.e. the treatment has been delivered very soon after the group experienced the trauma – often within days (Fernandez et al., 2003; Jarero et al., 2009 & Maslovaric et al., 2017). Palinkas et al. (1993) and Havenaar et al. (1997) found that the prevalence of PTSD in the general population during the first few years after a disaster has been shown to range from 1-11%, so it can be hypothesised that not everyone who took part in the research with group EMDR will have developed PTSD. Group EMDR has largely been delivered with specific populations to different clinical and research governance standards, and there was a lack of follow-up studies to assess the retention of treatment effect. Therefore, the few randomized control trials for EMDR with groups are only where a group has been used as an early intervention, and not with established PTSD (Shapiro, 2018). Nonetheless, the increasing amount of research for group EMDR is leading to an increased evidence base in support of EMDR for groups, including a recent study by Allon (2015) which did treat established PTSD, which will now be detailed.

Group EMDR and Established PTSD

Allon (2015) is the only study that uses EMDR as a group treatment for people who have had traumatic symptoms for a long time, and perhaps can be said to fulfil a diagnosis of PTSD. (It cannot be ruled out that participants in the early intervention treatments were also

not suffering from PTSD from other events in their lives, but the other studies have been specifically offered immediately after a disaster (Aduriz et al. 2009 & Maslovaric et al. 2017). Allon was working with women who had been sexually abused in a rural area of the Democratic Republic of the Congo. There were 37 participants, and the women were divided into two groups – to receive either two sessions of individual therapy (n = 8) using EMDR or two sessions of group therapy (n = 29) using the EMDR-IGTP. Session effects were measured using the IES-R (Impact of Event Scale – Revised), and a verbal rating from each participant of their Subjective Units of Distress (SUDS) on a scale of 0 to 10 (as per the EMDR protocol), where 10 indicates high levels of trauma-related distress and 0 indicates an absence of trauma-related distress. Despite significant issues with retention and access due to the location and the enormity of the trauma experienced by these women, their SUDS and IES-R scores did reduce after only two sessions of the EMDR-IGTP or individual therapy, thus indicating that group EMDR for PTSD could be as effective as individual therapy. The average score for all participants at pre-treatment was 52 (where the clinical cut-off score for a PTSD diagnosis is 33), and the average two weeks after terminating therapy was 33. The decrease in the IES-R score was statistically significant ($p = 0.03$).

There are challenges in delivering EMDR to a group, but the standard EMDR protocol is interactive, as the practitioner monitors and guides the client, enabling flexibility and adaptation.

A previous study by the author (Carr, 2017) was a feasibility study conducted in an IAPT (Improving Access to Psychological Therapies) service in England. Participants had suffered a single incident trauma, e.g. rape, road traffic accident etc. Participants met criteria for PTSD, as all of them had symptoms of post-traumatic stress for more than a month. Five weekly one-and-a-half-hour group sessions were offered to six participants. Scores were

taken at every session, using various questionnaires including the IES-R. Scores on the IES-R reduced over the period, to such an extent that three out of the five participants were below the clinical cut-off for PTSD post-treatment. While the remaining participants showed some improvement, further individual therapy was required to reduce their IES-R score to the normal range. It was hypothesized, however, that fewer sessions of individual therapy were required by the participants to achieve this outcome, due to the group sessions. NICE guidelines for the treatment of PTSD recommend an average of 14 sessions of therapy to see a clinical effect (NICE, 2018). In total, these two participants showed signs of recovery after seven sessions, indicating the potential clinical benefit of group EMDR at reduced cost. However, this was a small pilot study, with no control group, randomization or follow-up – a further, large-scale study is needed.

Current Study

The current research study develops the previous feasibility study (Carr, 2017) to examine whether the EMDR-IGTP can be an effective treatment with Veterans who meet diagnostic criteria for PTSD, and to report on some of the special considerations needed to adapt EMDR for group delivery in this context. The EMDR-IGTP was used due to its larger evidence base, and the author underwent training specifically for this to improve fidelity in the model.

This research is therefore unique, as it will add to the literature on group EMDR, while focusing on individuals who fulfil the diagnostic criteria for PTSD, and it is the first time the EMDR-IGTP has been used with UK military Veterans.

Method

Treatment Protocol

The EMDR-Integrative Group Treatment Protocol (EMDR-IGTP) was developed by members of the Mexican Association for Mental Health Support in Crisis (AMAME CRISIS) to deal with the extensive need for mental health services after Hurricane Pauline ravaged the coasts of the states of Oaxaca and Guerrero in 1997. The protocol combines the eight standard EMDR treatment phases (Shapiro, 2018) with a group therapy model (Jarero et al., 2006) and an art therapy format (Maxfield, 2008), using the butterfly hug as a form of a self-administered bilateral stimulation (Boel, 1999; Artigas, Jarero, Mauer, López Cano, & Alcalá, 2000; Jarero, Artigas, & Montero, 2008). The protocol was originally designed for working with children and was later modified for use with adults. The aim behind its initial development was to offer greater coverage than individual EMDR (Jarero et al, 2008). In addition, the EMDR-IGTP protocol does not ask the participants in the group to verbalize information regarding the trauma; there are no tasks to carry out between sessions; and treating several subjects at once makes it possible to rapidly involve many sections of an affected community at once (Jarero & Artigas, 2014).

Study Design

This experimental quantitative study is a non-randomized, uncontrolled, within-subjects design. There was one independent variable (EMDR) with six levels to it. This study is about group EMDR and to see how effective this is with military Veterans with PTSD. To be included in this study, Veterans must be over the age of 18, meet the criteria for a diagnosis of PTSD, and the PTSD must be from a combat related incident. Participants who have previously been treated with EMDR or were currently in other therapy would be exempted from the study. The treatment groups received EMDR-IGTP over a course of six weeks. There was no control group as it was a pilot study. There were six treatment groups altogether running consecutively. A treatment group would form once sufficient participants

had enquired about the group and confirmed that they wanted to join (and were deemed to meet the criteria). Questionnaires to measure for depression, anxiety, functioning, and the primary dependent variable (PTSD), were administered in all groups at every session over the 6-week period. The primary dependent variable was symptoms of PTSD with other variables including symptoms of depression, symptoms of anxiety and measurement of functionality. A quantitative design was chosen in order to generate data that could indicate preliminary efficacy in this group. There is already some research that supports the efficacy of the EMDR-IGTP in reducing symptoms of PTSD (Jarero et al., 2009; Jarero et al., 2010; Aduriz et al,. 2009; Jarero and Artigas, 2012 & Jarero and Artigas, 2014), but there is currently no research investigating its efficacy with a Veteran population in the UK. A quantitative study would have helped measure the usefulness of this as a treatment. A mixed methods approach might also have been useful – to perhaps find out the experience of the group members – but the strict time limits of this study meant that this was probably not feasible alongside a pilot efficacy trial.

No control group was included as part of this study for a variety of reasons. This research was being conducted as part of a taught doctorate, and it was impractical in the time allowed and resources required would go beyond what could be done in a taught doctorate. A waiting list control was also impractical for the same reasons. Participants were recruited via charities, where there was no pre-existing waiting list for therapy, and it was hypothesized that it would have been harder to recruit sufficient numbers for both a waiting list control and a treatment group.

Recruitment

Participants were recruited by numerous visits to drop-in sessions run by the charities to advertise the groups, as well as attendance at various events where Veterans were known to be present, e.g. Remembrance Day parades and a local garden project that was being run by Veterans etc. Recruitment flyers were also handed out around the local barracks, library and other public buildings, as well as being emailed to Veteran groups in the area (Appendix 3). Social media was also used to advertise the study. Interested people were then provided with the information sheet and the consent form, which was discussed in more detail verbally prior to the first group attendance.

Any interested people who were not already linked with the two charities, SSAFA (formerly Soldiers, Sailors, Airmen and Families Association), or Change Step were asked to complete a further form, and this was passed to the charity of their choice for further support. This was an ethical requirement of the study, to ensure they had adequate support throughout the trial. If interested people did not meet the threshold for PTSD, they were still referred to these charities or Veterans Wales (or other NHS Veteran support, if in England) for further support.

Participants

Adults over 18 were recruited from branches of SSAFA and Change Step as well as the recruitment drive mentioned above. SSAFA and Change Step are two charities that work with Veterans of the British armed services. Participants needed to meet criteria for a diagnosis of PTSD, and the PTSD must have been from a combat-related incident.

In total, 36 participants were recruited into six groups, with the first starting in January 2019, and the final one ending in August 2019. The groups were facilitated by the researcher with the support of two different people – both aligned with the supporting charities. The 36 participants were 94.5% male and 5.5% female. The mean age was 39.75

years (SD = 10.924), with a range of 22 to 58 years. 34 participants over the six groups made it to the final session. There was an average of six participants in each group over the time period. Each group met on the same day and at the same time every week. Venues were non-military, with the majority being held in a rugby club that loaned a room for the purpose.

A few participants missed certain sessions (due to illness or other factors), but all, except the two that dropped out, completed questionnaires at the start and the end, ensuring sufficient data for analysis.

Only two participants dropped out over the period – one because a family member had died, and the other because they struggled being in a group. This participant was redirected to the NHS Veterans' service in Wales for individual support. The groups ran for 1½-hour sessions weekly over a 6-week period. The group protocol followed the EMDR-IGTP, which was slightly adapted (as set out in detail below). A set of follow-up measures with pre-paid envelopes were sent to each participant one month after each group finished, to see if any improvements endured beyond completion of the programme; unfortunately, only one was returned (Table 1 sets out the details of participants).

Table 1

Group age ranges overall

Age Range of Participants	*No*	*Percentage (%)*
20-29	10	27.78
30-39	11	30.56
40-49	6	16.67
50-59	9	25.00

Inclusion and Exclusion criteria

To be included in this study, Veterans must be over the age of 18, meet the criteria for a diagnosis of PTSD, and the PTSD must be from a combat related incident.

Participants who had previously been treated with EMDR or were in other therapy were excluded from the study. They were also exempted if they were assessed to be at high risk to themselves or others. Only one person was exempted from the study. The reason for this was the individual was assessed as medium to high risk and not suitable for group work by the collaborating charities. This person was already engaged with the All Wales Veterans' Health and Wellbeing Service, as well as having support from the two charities, so his ongoing risk issues continued to be managed by them.

Materials/Apparatus

Basic Information Sheet. A sheet to record the participants' names, addresses, date of birth, contact details, ICE (in case of emergency), GP, service number and which operations they had served in (Appendix 1).

Form for Charities. A sheet to record basic data and consent for their information to be linked with SSAFA or Change Step (if they were not already linked) (Appendix 2)

Various self-report questionnaires were used in this study, and all were chosen because they are established, valid and reliable measures. They are also free from copyright issues and were easy to administer at each session within a group setting. More formal questionnaires, for example the Clinician Administered PTSD Scale (CAPS) (Weathers et al., 2018), take 30 to 60 minutes to complete by a trained person, so administration of this per group session would have been impractical.

One of the aims of this study is to see whether the treatment reduces symptoms of PTSD. PTSD has also been found to be comorbid with depression (O'Donnell, Creamer & Pattison, 2004), and anxiety (Kroenke, Spitzer, Williams, Monahan, & Löwe (2007), as well as decreasing quality of life (Mendlowicz & Stein, 2000) and increasing problems with social functioning (Beck, Grant, Clapp & Palyo, 2009). The questionnaires were selected to help understand any correlations between trauma, mood (anxiety and depression) and functioning.

The PTSD Checklist (PCL-5) (Appendix 4). The PTSD Checklist for DSM-5 (PCL-5) is a 20-item self-report measure that assesses the presence and severity of PTSD symptoms. Items on the PCL-5 correspond with DSM-5 criteria for PTSD. The PCL-5 can be used to quantify and monitor symptoms over time, to screen individuals for PTSD, and to assist in making a provisional or temporary diagnosis of PTSD. Participants are asked to rate how bothered they have been by each item on a 5-point Likert scale ranging from 0-4. Items are summed to provide a total score. The answer options range from 0 (not at all) to 4 (extremely). Severity can be determined by adding scores of each item together to determine a total score. The range is 0-80. A PCL-5 cut-point of 33 appears to be a reasonable value to use for provisional PTSD diagnosis (Blevins et al., 2015). It follows DSM-V PTSD diagnostic criteria, and maps directly DSM-V (Wilkins, Lang & Norman, 2011). Its internal consistency is satisfactory, with Cronbach's alpha ranging from 0.56 to 0.77, and mean inter-

item correlations ranging from 0.22 to 0.73 for the four PCL-5 subscales and for the PCL-5 in total (Sveen, Bondjers & Willebrand, 2016).

The Patient Health Questionnaire (PHQ-9) (Appendix 5). This has nine questions on depression and level of impairment (Kroenke et al., 2001). One question is about risk. Participants are asked about their symptoms using answer options ranging from 0 (not at all) to 3 (nearly every day). Items are then summed to a total score, with a higher score indicating greater depression. The internal reliability of the PHQ-9 is excellent, with a Cronbach's α of 0.89 (Spitzer, William, Kroenke et al., 2014). The PHQ scores are broken down as follows – 0-4 (no depression), 5-9 (mild depression), 10-14 (moderate depression); 15-19 (moderately severe depression) and 20-27 (severe depression).

The Generalized Anxiety Disorder Scale (GAD-7) (Appendix 6). This consists of seven questions on anxiety (Spitzer, Kroenke, Williams & Lowe, 2006). Convergent validity of the GAD-7 is good, as demonstrated by its correlations with two anxiety scales: the Beck Anxiety Inventory (r=0.72) and the anxiety subscale of the Symptom Checklist-90 (r=0.74) (Spitzer et al., 2006). The answer options range from 0 (not at all) to 3 (nearly every day). A total score is created by summing the items with a higher score indicating a greater frequency of anxiety and worry. The GAD-7 scores are broken down as follows – 0-5 (no anxiety), 6-10 (mild anxiety), 11-15 (moderate anxiety), and 16-21 (severe anxiety).

The Subjective Units of Disturbance Scale (SUDs). This is a commonly used self-report measure of affective distress (Wolpe, 1969). There is no formal form for this. It is used in EMDR therapy prior to the start of bilateral stimulations, and afterwards to quantify the client's self-report of reduced or eliminated disturbance. The score is out of 10, with 10 indicating high disturbance; the aim is for SUDS to reduce to zero by the end of processing.

The SUDS have been tested for validity, demonstrating that SUDS ratings correlate with levels of current anxiety and depression (Kim, Bae & Park, 2008).

The WSAS (Work and Social Adjustment Functioning Scale) (Appendix 7). This is a simple, reliable and valid measure of impaired functioning. Cronbach's ranged from 0.70 to 0.94. Test-retest correlation was 0.73 (Mundt et al, 2002).

The WSAS is designed to measure patients' perceived functional impairment resulting from a health problem. The original measure was a four-item scale, that covered the work, home, social, and private leisure domains, for rating disability in psychotherapy studies of phobias (Mundt et al, 2002). The five current WSAS items determine the following impairment dimensions: (1) work; (2) home management; (3) social leisure activities; (4) private leisure activities; and (5) relationships with others. Scores range from 0 to 40, with lower scores indicating better adjustment. Scores above 20 suggest moderately severe psychopathology, scores between 10 and 20 are associated with significant functional impairment but less severe clinical symptomatology, and scores below 10 are associated with subclinical populations.

Therapist details and supervisory arrangements

All assessments as to suitability for the group were carried out by the researcher who is an accredited consultant EMDR therapist with EMDR UK & Ireland, an accredited CBT therapist with the British Association of Behaviour and Cognitive Psychotherapies (BABCP), and a UK Registered Mental Health Nurse (RMN). The groups were facilitated by her and supported by two different colleagues over the course of the study (the same colleague for each group). Both colleagues were volunteers for one of the Veteran charities. Supervision was offered by another EMDR Consultant who also offered guidance on the group, and the

researcher was also in regular discussion with her supervision team and with Dr Jarero, the author of the EMDR-IGTP procedure, who offered guidance in the development of the group.

Procedure

Each group met weekly for six sessions at various venues for 1½ hours each session. Each venue had tea and coffee facilities, so this was offered when people arrived, to help create a convivial atmosphere while questionnaires were completed by everyone. The rooms used provided plenty of space, with tables and chairs for the participants, to facilitate the drawing components of the EMDR-IGTP. The questionnaires were administered at the start of every session, except the final session when they were administered at the end.

Participants were contacted one month after the final session of the group and asked to complete the measures again to check if any treatment effects were sustained, with only one response.

Adaptation of the EMDR-IGTP

The format for each group followed the EMDR group protocol (EMDR-IGTP) developed by Jarero and others (Jarero et al., 2009; Jarero et al., 2010; Jarero and Artigas, 2012; Jarero and Artigas, 2014). Historically, the EMDR-IGTP was designed as an intensive treatment – often over a couple of days or weeks immediately after a disaster. This format suited participants who may have travelled hundreds of miles to receive treatment, rendering weekly sessions impractical. It was impractical for this study to take two or three full days to deliver the intervention – with room hire and time off work for the participants to attend. Weekly sessions were therefore timetabled over a period of six weeks. The session length of 1½ hours for this study was chosen as this was used to good effect in the feasibility study

(Carr, 2017), while reducing the pressure of extended travel time for shorter sessions or time off work posed by longer sessions.

Procedures for Sessions

Session 1 – Psycho-education. This maps onto the client preparation and assessment stage of the eight-stage EMDR protocol. The purpose of this session was to start to develop group cohesion – a key feature of effective group psychotherapy (Yalom **&** Leszcz, 2005). Consent forms were signed at this stage, if not done previously. Basic psycho-education on PTSD was also taught, discussing the fight and flight response, how the brain processes trauma and the main symptoms of PTSD. PowerPoint was used and copies of slides were given to everyone at the end.

Session 2 – Installation of Safe/Peaceful Place and Introduction to the AIP Model. The purpose of this session was to ensure that all participants could find a Safe Place/Peaceful Place. This is a term used in EMDR to ensure that all participants can perhaps find an imaginary or real place in their mind that they can go to if the trauma processing is too overwhelming. It also helps provide a tool for them to use between sessions. Other techniques such as breathing, mindfulness and relaxation were also introduced in this session. Participants were introduced to the Adaptive Information Processing (AIP) model underlying EMDR, so that they could understand how it is hypothesized that EMDR works its theory of change (see page 24 for a review of this model) (Shapiro, 1998, 2001 & 2018).

Session 3 – Review of Safe/Peaceful Place and Start of Processing.

The purpose of this session was to ensure that the participants were using what they were taught in the previous session and to start the processing.

These sessions now followed the EMDR-IGTP protocol, and the participants started to process their traumatic memories.

The protocol consists of the following steps. At the start of each session, all participants were given an A4 piece of plain paper. They were instructed to fold it into four and then open it, laying it down with the long side being the width.

The participants were directed to the top left-hand rectangle on the sheet, and they were then instructed to draw a picture that represented the trauma memory that they wanted to process. After they had done this, they were instructed to write one word that represented their emotion that day concerning the trauma drawing. In a small circle in the drawing, they were then asked to write their SUDS (0-10) now associated with the emotion.

Processing was then achieved by using the butterfly hug and/or self-tapping by the participants. Both processes involved participants tapping themselves to provide the bilateral stimulation needed for the EMDR. Bilateral stimulation is stimulation that is either visual, auditory or tactile and occurs in a rhythmic left-right pattern, thus stimulating the different hemispheres of the brain in turn, and facilitating the growth of new, adaptive neural connections. The butterfly hug was developed by Luciana Artigas during her work with the survivors of Hurricane Pauline in Mexico (Artigas et al., 2000), and is a way of carrying out bilateral stimulation in a large group. It involves each participant crossing their arms over their chest to interlock and form a “butterfly’s body”. This ensures that when the processing starts, there will be alternate moving of the hands, thus providing the bilateral stimulation. Participants’ eyes are closed at this point, where possible. If this was individual therapy, then eye movements would probably be used, but this is not possible in a group situation. Another technique for bilateral stimulation was also offered, to give participants a choice. This was developed by Elan Shapiro and participants were trained to tap their knees from left to right

with one hand, and to follow this hand movement with their eyes. This provides both visual and physical bilateral stimulation simultaneously (Lehnung et al., 2017). Only a few members of the groups used this, as most found the butterfly hug to be sufficient.

Participants were then instructed to draw a picture of what came up in their mind now when they thought of that trauma memory in the top-right rectangle on the sheet. They were asked to write the word representing/association with the emotion that came up with this new drawing and write their SUDS rating (0-10) associated with that emotion. They were then asked to close their eyes and imagine the new trauma drawing while doing the butterfly hug (or other method of processing). At this point, none of the participants are asked to share their trauma drawings, because this could possibly trigger too much trauma activation within the group. This would again last for a couple of minutes – so enough time for them to focus on the image and then return their mind to the group (Jarero & Artigas, 2014).

Participants were then instructed to draw, in the bottom-left rectangle, a picture of what came up in their mind now when they thought of the trauma memory. Again, they were asked to write the word representing/association with the emotion that came up with the new drawing and write their SUDS rating (0-10) associated with that emotion. They were again asked to close their eyes and imagine the new drawing while doing the butterfly hug or other processing method.

The final step was for the participants to draw in the bottom-right rectangle a picture of what came up in their mind when they thought of the same trauma memory that they had started with. They were again asked to write the word representing/association with the emotion coming up with the new drawing, and to write their SUDS (0-10) associated with that emotion. If SUDS were still high at the end of the session, then this was reviewed at the next group session and this same memory was then continued with, i.e. the process was started again (rather than starting with a new memory).

At the end of each session, various closing down exercises were used, e.g. light stream technique. There are various versions of the light stream exercise and one example is asking the participants to pick a colour that they associate with healing and imagining a stream of light in that colour and imagining the light to flow into the participants' body (with the therapist talking them through this process slowly). Jarero et al. (2008) suggests closing the session by having the participants standing in a circle, each facing the back of the person in front of them. Each participant should then think of their safe place and bilaterally tap the shoulders of the person in front of them. This was not used in these groups as it was thought to be too intrusive. Most participants did not know one another before the group started, unlike previous EMDR-IGTP studies, who would have experienced the same disaster/traumatic event collectively.

At subsequent sessions the same process happened – so each participant would be given a sheet of paper and asked to focus on a memory that they wanted to work on. A different memory would be worked on unless the previous memory had not reduced in SUDS.

Mapping This Onto the Standard EMDR Protocol

The EMDR-IGTP administers the eight phases of EMDR individual treatment (Shapiro, 2018) and contains all the components of individual EMDR therapy. It was important to map this onto the original protocol, to illustrate coherence with the evidence-based individual intervention.

Phase 1 was the clinical history and formal evaluation with a properly validated instrument. This information was taken upon meeting the participants in the form of questionnaires, which measured whether participants met criteria for PTSD.

Phase 2 linked in with session 1 and 2 of the groups, when rapport was being built and the safe place was installed. Phase 3 could be seen when the participants drew something to represent a traumatic event. During Phase 4, the clients provided their own bilateral

stimulation using the butterfly hug (Artigas et al., 2000), SUDs measure were taken with pictures of faces that represented different emotions, and the incident was drawn repeatedly. In Phase 5, the clients made a drawing and a word or sentence. During Phase 6, the clients scanned their entire body while self-administering bilateral stimulation. In Phase 7, the clients returned to the safe/secure place to close the session, and in Phase 8, clients who showed more distress were assisted and reviewed.

Follow-up

Participants were contacted one month after the final session of the group and sent measures to complete to check if the treatment effects had been sustained. All participants had questionnaires posted with a stamped addressed envelope, but only one participant returned the questionnaires.

Ethical Issues

Ethical approval was first granted on 31st October 2018 by the Health and Applied Sciences Faculty Research Ethics Committee at the University of the West of England. The committee approved the project pending some minor adjustments to the consent form. The All Wales Veterans' Health and Wellbeing Service (an NHS Service) then asked for an amendment to the Participant Information Sheet to include reference to their service. The amendments were completed and signed off by the chair of the Ethics Committee at the Graduate School on 29th November 2018. The ethical consent can be seen in Appendix 8 and the consent form in Appendix 9.

The researcher is an experienced practitioner, having worked in mental health for more than 20 years. She has experience of working with the military, having worked with serving military in the past at Tidworth Department of Community Mental Health (DCMH) and regularly works with Veterans in her current practice.

This is a vulnerable population. Informed consent was sought from all participants. Each participant was linked with a keyworker from the charities, who provided support during and after the treatment. Two people facilitated the group, and if anyone indicated on their questionnaires that they were feeling suicidal (question 9 of the PHQ-9 specifically), risk was assessed further by the researcher. Further support was arranged where required. The one participant who found the groupwork distressing was offered individual support through the All Wales Veterans' Health and Wellbeing Service, and regularly checked in with him and his wife until he was accepted by that service. It is also recognised that scoring 0 for question 9 of the PHQ-9 does not necessarily mean that the person has no intention to harm themselves. This is recognised in various papers (Simon et al, 2013; Louzon, et al 2016; Rossom et al, 2017). The Louzon paper identifies that although scoring >1 on question 9 of the PHQ-9 might indicate a risk of suicide, 71% of those committing suicide scored 0. The hypothesis is that when people are serious about their intention to commit suicide, then they stop telling people so would score 0 for this question.

Methods of Analysis

The design comprises a single group treatment with longitudinal repeated measures collected immediately pre-sessions 1-5 and at the end of session 6, using validated questionnaires. The groups ran consecutively and were repeated until a total of six had completed.

Two-pass data entry was undertaken to ensure coding fidelity and data veracity. Data validity checks were undertaken, and derived scale data was examined for the presence of any unduly inferential observations. Cronbach's alpha was calculated for each measure at baseline for comparison against published data. An assessment for missing data was undertaken and the total amount of missing data was small. There were six groups with 36

participants starting the treatment and 34 completing. Two people dropped out for reasons previously outlined, and five participants missed at least one session, but data was available from the start and end of treatment for all 34, and the missing data is entirely consistent with random missing data and, for this reason, the data was analysed on an available case basis (Bennet, 2001). Only one person returned follow-up data, so that could not be analysed.

For the derived scale data, an omnibus assessment of well-being over the study duration was undertaken using an analysis of variance for the one-way repeated measures design. Specific changes in mean values was undertaken using a pairwise post-hoc application of the paired samples *t*-test, and Cohen's *d* for repeated measures data was used to quantify standardized effect size. The percentage of patients transitioning between clinical thresholds were reported to quantify clinical effect on well-being. Also, 95% Clopper-Pearson Confidence Intervals for the percentage showing an improvement over the study duration was given.

Results

Introduction

The aim of this pilot study was to evaluate the efficacy of the EMDR-IGTP protocol in reducing PTSD and other related symptoms such as depression and anxiety in military Veterans in the United Kingdom. This results section will set out the descriptive data. It will then detail what tests (both how and why) were carried out with the data that had been collected, how this was analysed, and the results.

Statistical analysis

Two-pass data entry were undertaken to ensure coding fidelity and data veracity. Data validity checks were undertaken, and derived scale data were examined for the presence of any unduly influential observations.

Raw scores for each group showing the scores on all the questionnaires can be seen in Appendix 10 before analysis took place.

An assessment for missing data was undertaken and the total amount of missing data was small, i.e. there was 100% data at baseline for every participant. Two participants missed Session 2 only, one participant missed Session 3 only, and one participant missed Session 4 only. In all these cases, non-attendance to a session was due to external factors, e.g. a doctor's appointment. Therefore, these data may be considered missing completely at random (Bennet, 2001). Two participants were lost to follow-up post Session 2 (i.e. 36 started the programme and 34 finished). Otherwise all participants attending a session gave complete data. The percentage of missing data over the total was 5.66%, and entirely consistent with data being missing completely at random (MCAR). For these reasons, the data was analysed on an available case basis (Bennet, 2001).

For the derived scale data, an omnibus assessment of each measure over the study duration was undertaken using an ANOVA for the one-way repeated measures design, and the first linear component used to examine linear trend. A paired sample *t*-test breaking down each questionnaire was carried out, comparing Session 1 with Session 2 etc, so the maximum amount of data could be used. Four error bar graphs were created for this (one for each questionnaire). *T*-tests were also done for each questionnaire, looking at the clinical thresholds.

Specific changes in mean values was undertaken using a pairwise post-hoc application of the paired samples *t*-test. Cohen's *d* for repeated measures data was used to quantify standardized effect size. In general, absolute thresholds to help interpret the magnitude of effect are: $d = 0$ indicates the absence of an effect and, for statistically significant effects, $0 < d < 0.1$ indicates a trivial effect, $0.1 < d < 0.2$ indicates a small effect, $0.2 < d < 0.5$ indicates a moderate effect, $0.5 < d < 0.8$ indicates a medium-size effect, $0.8 < d < 1.3$ indicates a large effect, $1.3 < d < 2.0$ indicates a very large effect, and $d > 2.0$ indicates a huge effect. The percentage of participants transitioning between clinical thresholds were reported, to quantify clinical effect on well-being. 95% Clopper-Pearson confidence intervals for the percentage showing an improvement over the study duration were given. The percentage of participants reporting a change equal to, or larger than, the Minimum Clinical Important Difference (MCID) for each measure was also given.

Table 1 gives the sample mean and sample standard deviation for each measure after each session. For each measure, there was a noticeable decreasing trend after successive sessions.

Table 1

Descriptive statistics for the four measures of psychological disturbance over treatment sessions

	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
PCL-5	59.72 (11.418)	54.88 (11.276)	53.48 (14.678)	45.42 (11.054)	36.97 (10.570)	28.06 (9.228)
PHQ-9	19.03 (5.659)	17.65 (4.792)	17.47 (4.507)	14.88 (2.859)	10.58 (3.373)	7.76 (2.061)
GAD-7	16.25 (3.589)	16.09 (3.604)	16.73 (3.556)	14.03 (2.974)	9.61 (3.381)	6.97 (2.504)
WSAS	16.69 (3.479)	16.82 (3.252)	16.36 (3.334)	15.24 (3.307)	13.55 (3.374)	11.94 (3.209)

The data for all groups was analysed together, implying that the groups did not differ significantly. Inferential tests to look at differences between all groups before analysing the data as a whole were not carried out. The individual groups only had small sample sizes, so any tests between the groups would have low statistical power.

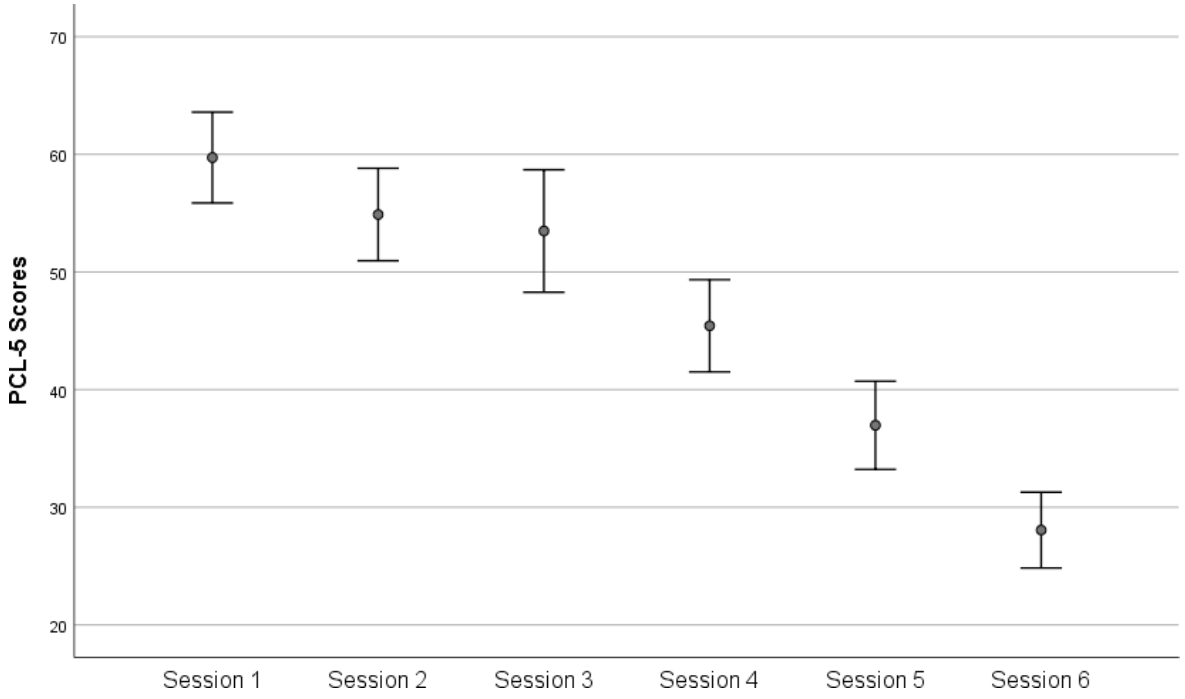
Each questionnaire will now be looked at separately.

PTSD: The effect of treatment on PCL-5 scores. This is the questionnaire that measured PTSD. For PCL-5, an omnibus assessment of means using a one-way repeated measures ANOVA indicated statistically significant differences in the data between at least two means - $F(5, 140) = 57.9$, $MSE = 69.5$, $p < .001$, and with a significant decreasing trend component over the course of the study - $F(1, 28) = 108.5$, $MSE = 178.2$, $p < .001$. For PCL-5, the mean after Session 2 was significantly lower than the corresponding mean at Session 1 ($p = .003$, $d = 0.44$), and this difference was maintained at Session 3 ($p = .022$, $d = 0.49$) but with no significant difference between Session 2 and Session 3 ($p = .391$, $d = 0.11$).

However, mean PCL-5 was significantly lower at Session 4 compared with Session 1 ($p < .001$, $d = 1.33$), Session 2 ($p < .001$, $d = 0.77$) and Session 3 ($p < .001$, $d = 0.54$). Thereafter, the mean at Session 5 was significantly lower than the mean at Session 4 ($p < .001$, $d = 0.75$) and the mean after Session 6 was significantly lower than the mean at Session 5 ($p < .001$, $d = 0.85$). Overall, from Session 1 to the end of Session 6, there was a very large statistically significant decrease in mean PCL-5 ($p < .001$, $d = 2.72$), as shown in Figure 2.

Figure 1

Error bar graph for PCL-5 scores over treatment sessions



The PCL-5 scores for all the participants ranged from 37 to 79, with the mean PCL-5 being 59.72. Post-treatment, the PCL-5 scores ranged from 12 to 57, with the mean PCL-5 being 28.06 for all participants.

The modal category for the PCL-5 after Session 6 was 100% in the clinical range at Session 1 and 20% in the clinical range at the end of treatment, with 80% no longer meeting criteria for PTSD.

Every patient with a PCL-5 score which decreased by 10 or more between Session 1 and Session 6 had a clinical improvement on that measure.

For the PCL-5 there were two non-completers, 32 with a clinical improvement and two with a change which does not meet the clinical threshold (88.8%, 95% CI 75.7% to 95.6%).

Table 2

This illustrates the percentage (N) of clinical outcomes over the study duration for the questionnaire PCL-5

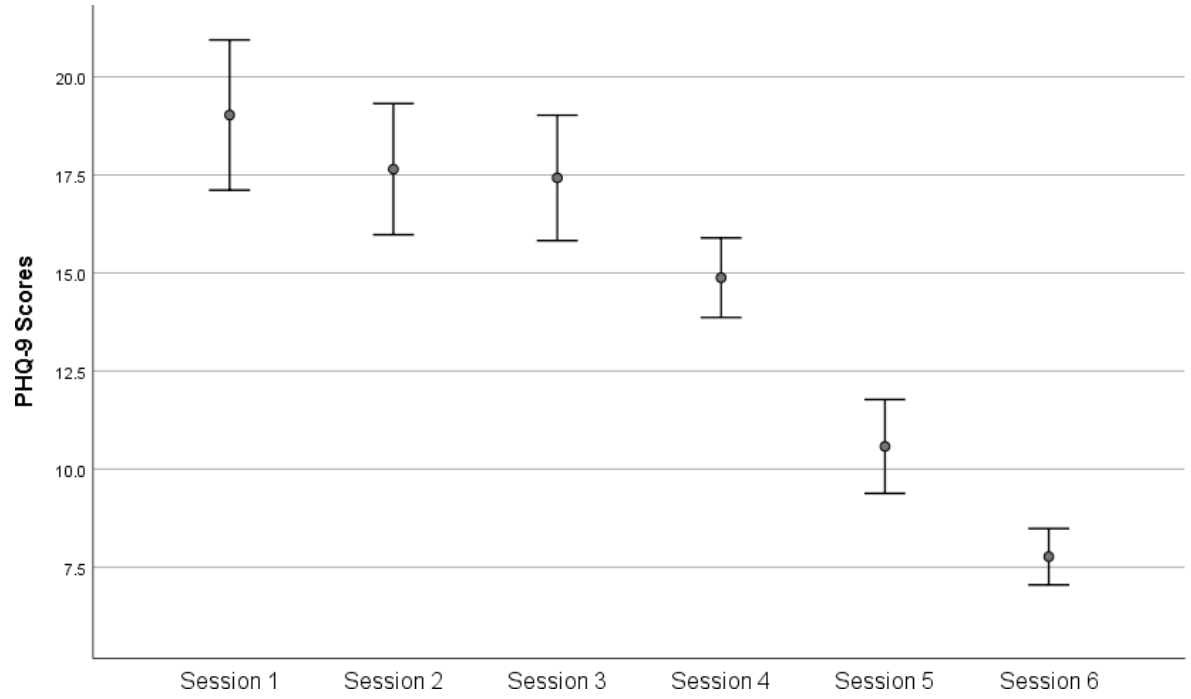
	PCL-5					
	S1	S2	S3	S4	S5	S6
Below cut-off	0.00 (0)	0.00 (0)	6.1 (2)	24.2 (8)	39.4 (13)	88.3 (30)
PTSD	100.0 (36)	100.0(34)	93.9 (33)	75.8 (25)	60.6 (20)	11.8 (4)
Total	100 (36)	100 (34)	100 (33)	100 (33)	100 (33)	100 (34)

Therefore, the ANOVA and *t*-tests support the hypothesis that the EMDR-IGTP can lead to a decrease in symptoms of PTSD.

Depression: The effect of treatment on PHQ-9 scores. This is the questionnaire that measured depression. For the PHQ-9, an omnibus assessment of means using a one-way repeated measures ANOVA indicated a statistically significant difference between means, $F(5, 140) = 95.5$, $MSE = 591.2$, $p < .001$, and with a significant linear component over the study duration, $F(1, 28) = 164.2$, $MSE = 16.1$, $p < .001$. The independent samples *t*-tests showed that mean values did not significantly decrease over Session 1, Session 2, and Session 3. However, mean PHQ-9 was significantly lower at Session 4 compared with the previous three sessions ($p < .05$, $d = 0.78$), the mean at Session 5 was significantly lower than the mean at Session 4 ($p < .001$, $d = 1.51$), and the mean after Session 6 was significantly lower than the mean at Session 5 ($p <.001$, $d = 0.84$). Overall, from Session 1 to the end of Session 6, there was a very large statistically significant decrease in mean PHQ-9 ($p < .001$, $d = 1.98$).

Figure 2

Error bar graph for PHQ-9 scores over treatment sessions



Looking at all groups, the pre-treatment PHQ-9 scores of all the participants ranged from 9 to 27, with the mean PHQ-9 being 18.91. Post-treatment, the PHQ-9 scores ranged from 2 to 11, with the mean PHQ-9 score being 7.76.

The modal category after Session 6 for the PHQ-9 was ‘Mild’ compared with a modal category of ‘Moderate/Severe’ prior to Session 1. Over the study duration, all 34 participants (100%) had lower PHQ-9 scores after Session 6 compared with study commencement (95% CI, 91.6% to 100%), with 31 (91.2%) having a better clinical outcome category (95% CI, 76.3% to 98.1%) after Session 6 compared with baseline, and 0 (0%) having a poorer clinical outcome category (95% CI, 0% to 8.4%).

There were two non-completers for the PHQ-9; 32 with a clinical improvement when judged against the MCID, (88.8%, 95% CI 74.7% to 95.6%) and two with a change that did

not meet clinical threshold. Every patient with a PHQ-9 score which decreased by 5 or more between Session 1 and Session 6 had a clinical improvement on that measure.

Table 3

Illustrates the percentage (N) of participants meeting categories for depression over the study duration for the PHQ-9 questionnaire

PHQ-9

	S1	S2	S3	S4	S5	S6
None	0.0 (0)	0.00 (0)	0.0 (0)	0.0 (0)	3.0 (1)	2.9 (1)
Mild	2.9 (1)	5.9 (2)	3.0 (1)	3.0 (1)	39.4 (13)	76.5 (26)
Moderate	17.6 (6)	14.7 (5)	24.2 (8)	36.4 (12)	42.4 (14)	20.6 (7)
Mod/Severe	44.1 (15)	38.2 (13)	42.4 (14)	54.5 (18)	15.2 (5)	0.0 (0)
Severe	35.3 (12)	41.2 (14)	30.3 (10)	6.1 (2)	0.0 (0)	0.0 (0)
Total	100 (34)	100 (34)	100 (33)	100 (33)	100 (33)	100 (34)

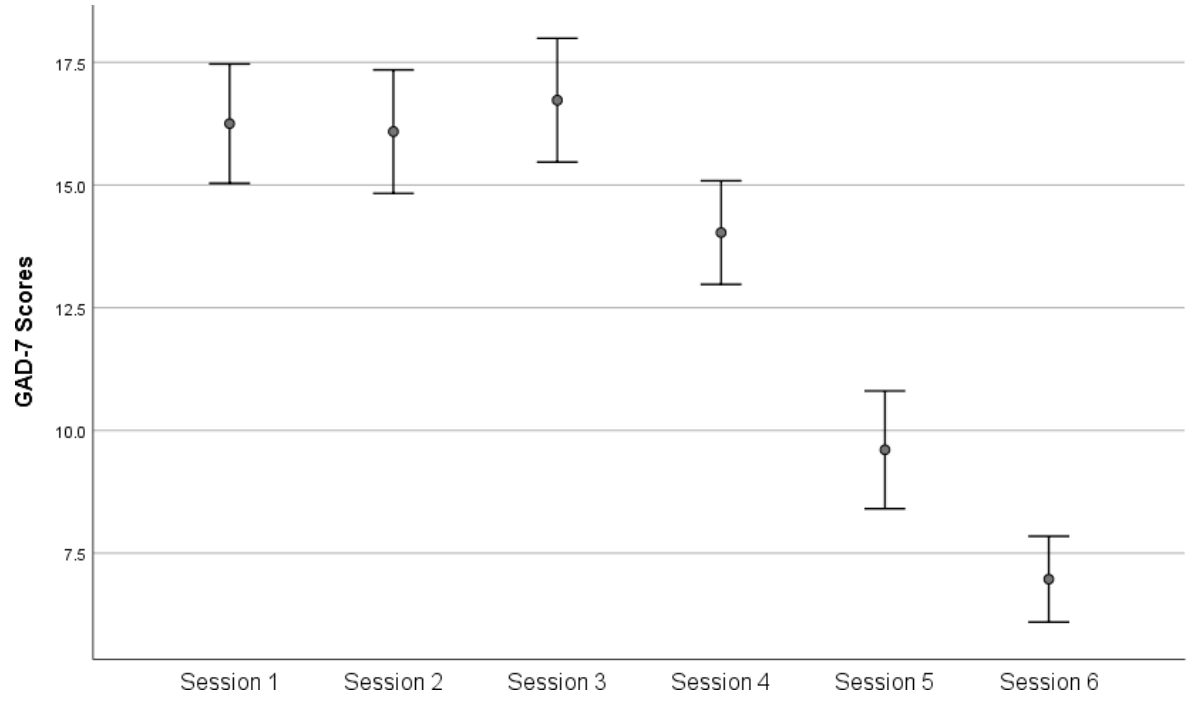
Therefore, the ANOVA and *t*-tests support the hypothesis that the EMDR-IGTP can lead to a decrease in the symptoms of depression.

Anxiety: The effect of treatment on GAD-7 scores. This was the questionnaire that measured anxiety. For the GAD-7, an omnibus assessment of means using a one-way repeated measure ANOVA indicated significant changes over the study duration, $\underline{F}(5, 140) = 110.9$, $MSE = 4.7$, $p < .001$) and with a statistically significant decreasing trend $F(1, 28) = 316.7$, $MSE = 6.9$, $p < .001$. For GAD-7, mean values at Session 2 did not significantly differ from the mean at Session 1 ($p = .797$, $d = 0.04$). Likewise, mean values at Session 3 did not significantly differ from the mean at Session 1 ($p = .797$, $d = 0.12$). However, mean GAD-7

was statistically significantly lower at Session 4 compared with Session 1 (p = <.001, d = 0.84), Session 2 (p < .001, d = 0.67) and Session 3 (p < .001, d = 0.79). Thereafter, the mean at Session 5 was statistically significantly lower than the mean at Session 4 (p < .001, d = 1.47), and the mean after Session 6 was statistically significantly lower than the mean at Session 5 (p < .001, d = 0.79). Overall, from Session 1 to the end of Session 6, there was a very large statistically significant decrease in mean GAD-7 (p < .001, d = 2.54).

Figure 3

Error bar graph for GAD-7 scores over treatment sessions



For GAD-7, the modal category after Session 6 was “Mild” compared with a modal category of “Severe” prior to Session 1. Over the study duration, 33 participants (97.1%) had lower GAD scores after Session 6 compared with study commencement (95% CI, 84.7% to 99.9%), with 31 (91.2%) having a better clinical outcome category (95% CI, 76.3% to 98.1%) after Session 6 compared with baseline, and 0 (0%) having a poorer clinical outcome category (95% CI, 0% to 8.4%).

For the GAD-7, there were two non-completers – 33 with a clinical improvement when judged against the MCID (91.7%, 95% CI 78.2% to 97.1%) and one with a change which did not meet clinical threshold. Every patient with a GAD score which decreased by 4 or more between Session 1 and Session 6 had a clinical improvement on that measure.

Table 4

Illustrates the percentage (N) of clinical outcomes over the study duration for the GAD-7 questionnaire

	S1	S2	S3	S4	S5	S6
		GAD-7				
Minimal	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	6.1 (2)	14.7 (5)
Mild	5.7 (2)	8.8 (3)	6.1 (2)	9.1 (3)	48.5 (16)	76.5 (26)
Moderate	20.0 (7)	23.5 (8)	18.2 (6)	48.5 (16)	39.4 (13)	5.9 (2)
Severe	74.3 (26)	67.6 (23)	75.8 (25)	42.4 (14)	6.1 (2)	2.9 (1)
Total	100 (35)	100 (34)	100 (33)	100 (33)	100 (33)	100 (34)

This concludes that the ANOVA and t-tests support the hypothesis that the EMDR-IGTP can lead to a decrease in the symptoms of anxiety.

Work and Social Adjustment: The effect of treatment on WSAS scores. This was the questionnaire that measured impairment of functioning across areas such as social life and work. For the WSAS, an omnibus assessment of mean using a one-way repeated ANOVA indicated a statistically significant difference between means $F(5, 140) = 33.3$, $MSE = 3.6$, $p < .001$ and with a significant linear component over the study duration, $F(1, 28) = 69.7$, *MSE*

= 7.8, $p < .001$. For WSAS, mean values between Session 1 and Session 2 ($p = 0.726$, $d = 0.04$), between Session 1 and Session 3 ($p = .344$, $d = 0.11$) and between Session 2 and Session 3 ($p = .124$, $d = 0.20$) did not significantly differ. However, mean WSAS was significantly lower at Session 4 compared with Session 1 ($p < .001$, $d = 0.56$), Session 2 ($p < .001$, $d = 0.69$) and Session 3 ($p < .001$, $d = 0.42$). Thereafter, the mean at Session 5 was significantly lower than the mean at Session 4 ($p = .001$, $d = 0.46$), and the mean after Session 6 was significantly lower than the mean at Session 5 ($p < .001$, $d = 0.48$). Overall, as shown in Table 1, from Session 1 to the end of Session 6, there was a very large statistically significant decrease in mean WSAS ($p < .001$, $d = 1.40$).

For WSAS the modal category was “Impaired” throughout the study but with “Severe” reducing from 19.7% after Session 1 to 0% after Session 6. Over the study duration, 32 participants (94.1%) had lower WSAS scores after Session 6 compared with study commencement (95% CI, 80.3% to 99.3%), with 14 (41.2%) having a better clinical outcome category (95% CI, 24.6% to 59.3%) after Session 6 compared with baseline, and 0 (0%) having a poorer clinical outcome category (95% CI, 0% to 8.4%).

Over the duration, all 34 (100%) of the participants improved their score compared with baseline (95% CI, 91.6% to 100%). This can be seen in Figure 5 below.

Figure 4

Error bar graph for WSAS scores over treatment sessions

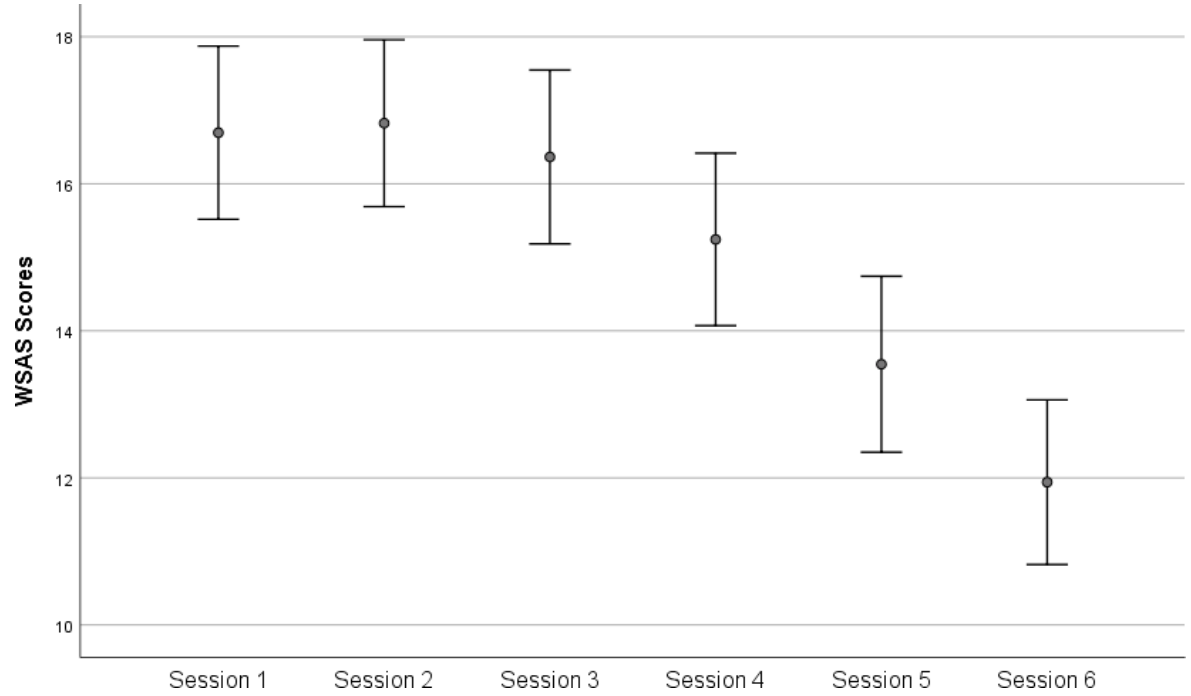


Table 4

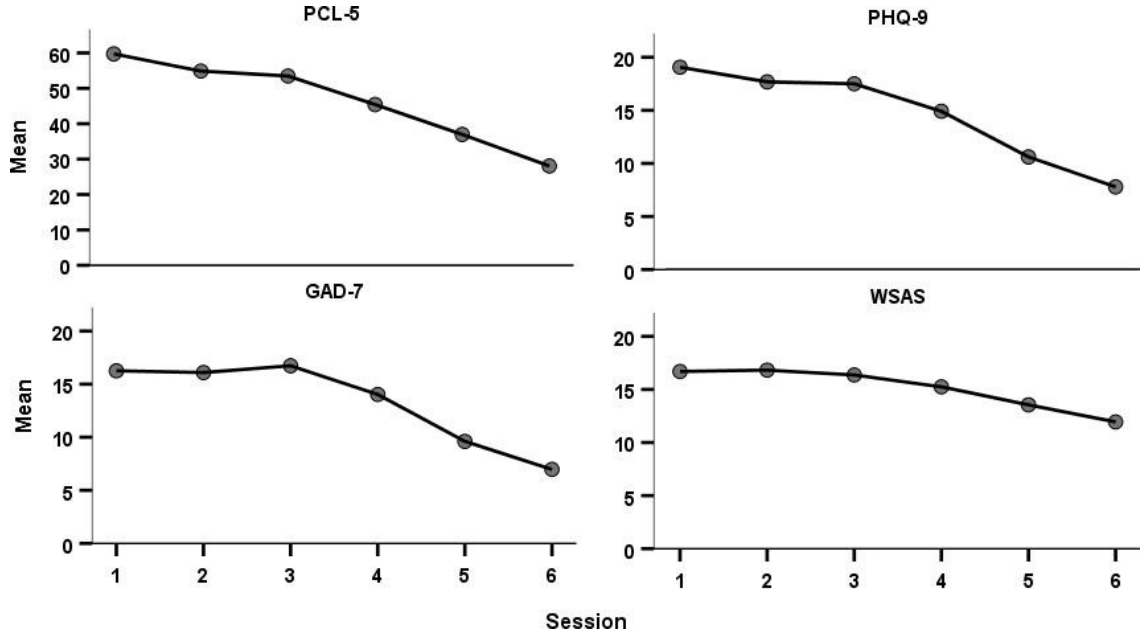
Illustrates the percentage (N) of clinical outcomes over the study duration for the WSAS questionnaire

	S1	S2	S3	S4	S5	S6
	WSAS					
Subclinical	5.6 (2)	5.9 (2)	9.1 (3)	6.1 (2)	12.1 (4)	29.4 (10)
Impaired	75.0 (27)	79.4 (27)	78.8 (26)	87.9 (29)	81.8 (27)	70.6 (24)
Severe	19.4 (7)	14.7 (5)	12.1 (4)	6.1 (2)	6.1 (2)	0.0 (0)
Total	100 (36)	100 (34)	100 (33)	100 (33)	100 (33)	100 (34)

This concludes that the ANOVA and t-tests support the hypothesis that the EMDR-IGTP can lead to a decrease in the impairment of functioning across areas such as social life and work.

Figure 5, below, also shows a noticeable decreasing trend after successive sessions in a simpler format enabling improvements over session for each questionnaire to be seen more clearly.

Figure 5: Mean values for PCL-5, PHQ-9, GAD-7, & WSAS over the whole study



Discussion

Introduction

This study evaluated the effectiveness of a group treatment – the EMDR-IGTP - in treating Veterans with PTSD. It examined whether EMDR-IGTP reduced symptoms of PTSD, depression and anxiety in Veterans, while increasing their social functioning. The results are positive as all groups demonstrated statistically significant decreases from pre to post treatment for PTSD symptom severity as well as in the areas of depression, anxiety and social functioning.

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Each of the findings will be discussed in more detail.

Summary of Findings

Quantitative assessments were used to identify whether the treatment was successful in this pilot study. Results indicate that there was a statistically significant reduction in PTSD symptoms, depression symptoms, anxiety symptoms and symptoms relating to social functioning from pre- to post-treatment. These results support the primary hypothesis of this thesis – that using the EMDR-IGTP with Veterans with PTSD could result in significant reductions in PTSD symptoms.

Overall, the primary outcomes from this study suggest it is feasible to implement a group-based treatment using the EMDR-IGTP protocol to treat Veterans with military trauma, as the majority of the groups experienced a significant reduction in a range of psychological symptoms from pre- to post-treatment. While it would be unrealistic to expect everyone to fully recover using this treatment, results show a clinical improvement in participants who completed the six sessions.

Although the focus of this study was on treating PTSD, there was also a significant difference in the groups' reduction on the depression scale (PHQ-9), the anxiety questionnaire (GAD-7) and the measure for social functioning (WSAS).

The treatment outcomes from this current study support the previous use of the EMDR-IGTP (Jarero et al., 2006; 2009; 2010; 2012 & 2014). It also adds to the existing research literature on trauma-informed treatments for military Veterans. The recent NICE guidelines for PTSD (NICE, 2018) stated that EMDR is no longer recommended for treating military trauma. This was due to lack of research, as opposed to contraindications in the literature. This study adds to the research that illustrates that EMDR in a group format could work with a military population.

The analysis of results looks at changes across time points for the groups. It is interesting that the measure for post-traumatic stress indicates an early improvement in symptoms, following the psycho-educational input and basic training in emotional regulation, but before trauma processing has begun. EMDR comprises many components, each as powerful as the next; this result echoes the emphasis in the literature that resourcing is as much EMDR as the trauma-focused work (Leeds, 2009). In contrast, no reduction in anxiety or depression or improvement in functioning occurred until the later stages of treatment – which may indicate that the reduction in trauma symptoms mediates these outcomes. On the PCL-5, there is a statistical change after session two of all groups overall and yet the processing part of EMDR has not yet started (this starts at Session 3). So why is change happening here?

Could it be that just the coming together in a group and the basic psycho-education carried out at the first session and the resourcing at the second session has been enough to enable change? Wessely et al. (2008) looked at whether psycho-education helps prevent post-traumatic psychological distress and found insufficient evidence to support the view that it helps trauma survivors, but they were not rejecting the possibility that it might serve an

important function. Did the psycho-education help the later sessions of the group? Would the group have had results as significant without the psycho-education part of the treatment? This is not known. However, no statistically significant change is made between Session 3 and Session 2 (p= .391). Could this be that the questionnaires had been completed with some fear in mind as to what would happen once the processing started (processing started in Session 3)? It is impossible to compare this to previous studies using the EMDR-IGTP as when previously used, the intervention was often in one session (sometimes all day) so there is no data on what happens between sessions (Jarero et al, 2006; 2009; 2010; 2012 & 2014). There is also the difference in this pilot and other uses of the EMDR-IGTP as more time was spent on psycho-education etc before the actual EMDR-IGTP started as this was important from an ethical point of view as participants had to be sufficiently resourced before any processing on the trauma memories took place, as risk had to be managed. It would have been impossible to go straight into processing (as in the usual use of the EMDR-IGTP) as this would have been unethical.

This does not tie in with the other questionnaires. For the PHQ-9, there is no statistically significant change after Session 2 of all groups (.007) but there is a difference after Session 4 (after the processing has started) (p = .001).

For the GAD-7, there is also no statistical significance across all groups until Session 4 (after the processing has started) (p= 0.01).

The WSAS is similar (p=0.01) with no statistical change until Session 4.

In all questionnaires, there is a significant change between Session 4 and Session 5, and it could be hypothesised that this is because the processing has started at this point, and is working and reflected in the reduction in scores.

There is insufficient data to establish whether men or women benefit more from the EMDR-IGTP, as there were only two women in the groups overall, with one dropping out of treatment after Session 2 (due to personal reasons).

Although there is a statistical significance to support the use of EMDR-IGTP as a possible intervention to treat military personnel experiencing PTSD, there were participants who did not meet recovery. Participant B5 in Group 2 recovered on the PHQ, GAD and WSAS questionnaires, but still scored for having symptoms of PTSD (scores 57) with not much change in his initial PCL-5 score (62). His scores on the PCL-5 went up as the processing started, which would probably be due to him no longer being able to avoid thinking of the trauma memories, but the group treatment did not alleviate his symptoms sufficiently. He was seen after the group and had individual EMDR and has now made recovery. Another participant, B7, also in Group 2, recovered on the PHQ, GAD and WSAS questionnaires but still scored for PTSD (scores 43), but his reduction was large, although not below the cut-off for PTSD. He did not want to be referred on for follow-up treatment on a one-to-one basis and felt that he had made enough improvement for him to feel a benefit. Another participant in Group 4 (D5) did not recover below the cut-off point for PTSD but did reduce enough from the initial data (starting at 76 on the PCL-5 and reducing to 54).

There could be a variety of reasons why some of these people did not make a full recovery. Steenkamp et al (2015) found that two-thirds of Veterans who complete cognitive-processing therapy or prolonged exposure therapy retain a PTSD diagnosis despite large within-group effect size. Other reasons could be the complex psychiatric comorbidities that often exist with this group of patients e.g. depression and substance abuse (Hamner, Robert & Frueh (2004). More research is needed to understand why some clients respond to psychological treatments for PTSD and others do not. Several factors could be involved, and several trauma-related factors might play a role in this. The complexity and severity of the

trauma, comorbidity, and mechanisms such as distress tolerance could all play a part. Research by Marshall-Berenz et al. (2010) shows that distress tolerance accounts for additional variance in PTSD symptoms after controlling the number of traumas and negative emotionality in a sample of adult trauma survivors. It could be hypothesized that participants with lower distress tolerance respond less favourably to psychological treatments for PTSD.

It had been hypothesised that expected change would have been seen in the groups from the first one to the final one. This was based on the idea that experience of running the groups would increase over time which might positively impact on later groups, but there does not seem to be any difference in the groups overall to support this hypothesis.

There are other reasons that could have had an impact on the effectiveness of the group. The EMDR-IGTP is based on the standard EMDR protocol, and there is a large evidence base to show that the EMDR-IGTP works, so this study backs up this data. However, there is a lack of evidence as to why the EMDR-IGTP might work, and the focus of this study, and previous studies using the EMDR-IGTP, has been on collecting quantitative data. It would be interesting to run a further study as qualitative project to find out the experiences of the participants and whether this contributes to effectiveness.

Other components could have also played a part in the success of this treatment. Empirically supported principles of change (ESPs) are important so that clinicians and researchers know what treatment component of the EMDR-IGTP worked and why. Rosen & Davison (2003) identified 118 nonspecific treatment components that are “elements of treatment that are shared across virtually all therapeutic treatment such as the treatment setting/building, expectations of improvement, and the therapeutic relationship”.

Other nonspecific factors include therapist effect, which is the therapist’s impact on treatment outcome. All participants had been briefed prior to the groups (to check if they

were suitable) and this could have had a positive impact. Crits-Christoph et al. (1991) is a meta-analysis of treatment outcome studies and found that therapist effects accounted for 8.6% of the variance in treatment outcomes. Laska et al. (2013) looked at a study implementing CPT (Cognitive Processing Therapy) for PTSD in Veterans and found that the therapist effect accounted for 12% of the variance in treatment outcomes. There are various hypotheses as to what characteristics the therapist must take into account including the therapist's ability to facilitate interpersonal skills, but Anderson et al (2009) found that therapist effect significantly predicted treatment outcomes. The researcher is skilled in facilitating interpersonal skills, with a long history of working as a RMN, and as a both a cognitive behaviour therapist and an EMDR therapist. Could it be that this experience helped in my ability to facilitate interpersonal skills and, subsequently, with treatment outcomes? Therapist alliance is another factor that is found to increase treatment outcomes, and Horvath & Bedi (2002) found that this alliance accounts for a 5% variance in clinical trials.

Studies looking specifically at the factors required in treating PTSD include the therapist alliance. Cloitre et al. (2004) found that clients with higher alliance ratings earlier in the treatment process reported better treatment outcomes when participating in CBT treatment for child sexual abuse-related PTSD. McLaughlin et al. (2014) looked at results from 116 participants who were randomly assigned to PE (prolonged exposure therapy) treatment for PTSD and they found a positive relationship between therapeutic alliance and PE outcomes.

Group alliance was important, and effort was made to ensure that the group would bond by identifying a building to host most of the groups that had no mental health stigma or association with the military. It also had parking. Coffee/tea and biscuits were offered, and the participants in all groups were encouraged to arrive early to complete the questionnaires in comfort before the session, and this led to "bonding" among the participants occurring, and

this too might have helped with the building of a therapeutic relationship between the participants and myself as group lead and the group generally.

Another possible factor for the effectiveness of this study is that of Researcher Allegiance (RA). There is a large body of research on this (Gaffan, Tsaousis & Kemp-Wheeler, 1995; Luborsky et al., 2006; Munder, et al., 2012 & Munder et al. 2013). RA can be defined as "the preference that authors apparently hold for one therapy over others" (Gaffan et al., 1995). As the researcher favoured the EMDR-IGTP, and had specifically undergone training in this, could their allegiance to this have improved the outcomes? Munder et al. (2012) found that allegiance explained 12% variance in treatment outcomes.

Health intervention research in counselling psychology

As a counselling psychologist in training, where does this research fit with the ethos of a counselling psychologist? Counselling psychologists work to reduce psychological distress and to promote the well-being of individuals. It can be said that this group treatment has aimed to do this.

Woolfe (2016) defines counselling psychology as being rooted in humanistic values and human potential advocating the fulfilment of the potential of the client, irrespective of the difficulties the person is experiencing. In the group process, the experience of the client was always paramount, fitting with this value of counselling psychology, as all participants were continually assessed (verbally and visually and by use of questionnaires). If there was any concern after the group about any member (perhaps something that a co-facilitator might have picked up rather than me), then the participant was contacted, and any support provided (if needed). The participant that did drop out of the group (he was struggling to sit in the group) was regularly telephoned after leaving to ensure he was okay and to hold him until he found other support.

Counselling psychology is unique in that its emphasis on a holistic and development view of the individual's life. If there had been adequate time then it would have been ideal to understand more about the development history of each participant, but this was not an option. However, the subjective experience of the participants was valued as much as possible in the short space of time they were part of the research programme. The participants were always valued throughout the treatment journey and, as Calhoun & Tedeschi (1999) would describe it, treated as expert companions.

Upholding the values of a counselling psychologist has been tough in this research, particularly due to the emphasis on requiring a diagnosis of PTSD being a condition of this research. This goes against the value of a counselling psychologist, who generally wants to treat a participant holistically, and perhaps looking at their difficulties subjectively, rather than trying to put them into a "label", e.g. diagnosis. Diagnosing a person with a label such as "PTSD" is only one framework of working with them, and it can leave a client feeling depersonalised and unheard. Unfortunately, if the evidence bases for treatments such as EMDR-IGTP are to be increased, then there is a need for the counselling psychologist to work with the system (rather than against) but continue to use their relational skills when offering the treatment.

One obvious limitation in this research is the lack of follow-up data. It is therefore unknown whether the improvements recorded were short-lived. It was hoped that secondary analyses would have been conducted but, unfortunately, only one person returned the post-group-treatment questionnaires (despite all participants being sent questionnaires with a stamped addressed envelope). The distance between the researcher and the participants' homes made it unfeasible for them to be contacted for face-to-face appointments to follow up the data and some of the participants had returned to work following the treatment. Thus, these results, while supportive of future research, are only tentative and indicative.

Implications of the findings

Theory

This study adds to the research already out there that uses the EMDR-IGTP with positive results (Jarero et al., 2006; 2009; 2010; 2012 & 2014; Zaghrout-Hodali et al. 2008, Aduriz et al. 2009 & Maslovariet et al. 2017). It also adds to the research specifically for treatment interventions with Veterans and highlights that EMDR can have a positive effect and also can be used successfully in a group.

Policy and Practice

This pilot study highlights that group interventions should be considered as a possible treatment option for Veterans with PTSD and it would be hoped that once this data is published that more interest in running groups would be generated so that further research using the EMDR-IGTP could be used, perhaps running a RCT which might then be credited in any future systematic review of the literature with Veterans. This study is too small to change practice across the United Kingdom that heavily relies on NICE guidelines but it is the start of bringing awareness that other interventions can work.

The literature review highlighted the economic cost of PTSD (Buljan, 2015 & Wang et al. 2016) and for this research 36 sessions of therapy were conducted at 1.5 hours of time. This equates to 54 hours in total. If each participant that started the groups were to have 6 sessions at one hour a time (the standard amount of time usually offered in NHS clinics) then this would amount to 216 hours in total which would have cost more to the provider, as well as more time in room hire etc. This intervention can be seen as cost effective and also that it gets results.

Reflections on Methodology

This was a small pilot study. It was reliant on participants being found for the group (there was a worry that there would be insufficient numbers). It was also reliant on self-administered measures for PTSD. It could be that the participants over reported the PTSD scores and future research might be more suited to using a gold standard measure like the CAPS (Clinician-Administered PTSD Scale). This was also only a pilot group with no randomisation and no control group.

Future Directions

Practice

It would be useful if the EMDR-IGTP could be utilised in more areas with the military e.g. serving military (so at the DCMHs) and charities that run programmes.

At least six of the participants in this study were working in the ambulance service and spoke about their difficulty in getting support for their PTSD. A further study, perhaps looking at participants who are in the ambulance service who have also been in the military, would be useful to see how many were perhaps accepted to work in the ambulance service while having PTSD symptoms and whether this affected their work as paramedics.

Research

This pilot study paves the way for future research perhaps as an RCT. It would be interesting to try and get a wider range of participants – so more from different ethnic backgrounds and a more equal balance of both men and women. It would also be useful to see if there is a difference in participants recovery dependent on the number of ACEs they had (ACEs were not measured for this study) as well as looking at their educational background.

Limitations

There are several limitations with the current study. The first is the sample size. The sample is relatively small and homogenous. This limits the generalisation of the findings. The participants were also mainly white males, so future studies could benefit from including different geographical locations and facilities to see if the group results generalize across other ethnicities and genders.

Another limitation to the measures used in the current study is the absence of an assessment of the participants' trauma histories. The literature review identified studies to show that most people presenting with a military trauma have more than one trauma. How would it be known that the intervention was treating the military trauma only? The study relied on the goodwill of the participants when asking them to focus on the military trauma, but it could be that they were focusing on other traumas in their lives. Details of what they processed were not collected in the sessions and this, again, could be specifically collected and monitored in future research.

The SUDS scores were taken during the session – the scores were written on the drawings the participants made. The participants kept the drawings, so no record of the SUDS scores were kept (although the facilitators did see the SUDS when walking around the room to monitor progress and to see if any SUDS were not reducing). Future studies could include a requirement that the pictures (and SUDS data) are kept as part of the research.

Another large limitation of the current study is the absence of a control group. The current study investigated reductions in symptoms over six sessions of therapy without including a control group, such as treatment as usual or a wait list control. This limits the conclusions that can be drawn from the treatment outcomes and might impact the validity of the study. A control group would control for factors that could have an impact on the

treatment outcomes, such as events outside of the treatment, e.g. one client was going through a divorce. However, as this is a pilot study, it is common and appropriate to not have a control group (Onken et al., 1997).

Another limitation is the lack of randomisation. Participants joined the groups when they showed an interest and were already showing a willingness to participate in a group. The results are strong and provide evidence of a contribution to a gap in the literature, but the strength might be due to the absence of randomisation or control along with possible interventionist effects and self-report bias.

Other factors that could have positively impacted treatment outcomes include previous participants encouraging others to join the group and informing them of the positive effects of the treatment. A few of the group did advertise their successes on social media and this led to an increase in participants for later groups.

There is also no follow up. Post-treatment scores were unavailable due to only one participant returning post-treatment questionnaires (these were sent out four weeks after the groups had finished). Follow-up data is important, as it checks to see if the treatment effect still exists.

Summary

The results are excellent, and it would be interesting to see if a larger research project as part of an RCT with the same population would reach the same findings. It would also be interesting to conduct a mixed design to get an understanding of the participants' experiences of the group process. Any larger research project following on from this would add to the evidence base for the use of EMDR with military trauma.

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Appendix 1 – Basic Information Sheet

BASIC DETAILS OF PARTICIPANTS

Title of Project: Does Eye Movement Desensitisation Re-processing (EMDR) work in a group format? A pilot study with military veterans in the United Kingdom

Name of Researcher: Sylvia Davies

NAME: _____

ADDRESS: _____

_____

DOB: _____

PHONE NUMBER: _____

EMAIL: _____

RELIGION: _____

GENDER: _____

ETHNIC ORIGIN: _____

REGIMENT: _____

TOURS: _____

SERVICE NO: _____

NEXT OF KIN: _____

TEL NO: _____

GP: _____

ANY ALLERGIES: _____

MEDICATION: _____

SIGNED: _____

DATE: _____

Appendix 2 – Form for Charities

CONSENT FORM TO PASS DETAILS TO SSAFA and/or CHANGE STEP

Title of Project: Does Eye Movement Desensitisation Re-processing (EMDR) work in a group format? A pilot study with military veterans in the United Kingdom

Name of Researcher: Sylvia Davies

I consent to the following information to be passed to Change Step/SSAFA (Brecon) (delete as appropriate) in order that they can provide extra support to me (if I need it) whilst I am part of the above project.

NAME: _____

ADDRESS: _____

_____

PHONE NUMBER: _____

EMAIL: _____

DOB: _____

REGIMENT: _____

TOURS: _____

SERVICE NO: _____

SIGNED: _____

DATE: _____

Appendix 3 – Flyer Produced To Help Advertise The Groups

DO YOU HAVE PTSD? ARE YOU A VETERAN?

Do you want
to be part of a
FREE
six-week treatment
programme in Brecon?

BRIEF INFORMATION

SYLVIA DAVIES

I am a psychotherapist and I reside in the Brecon area. I have been piloting a treatment group in the NHS and I am now taking this group forward as part of a Doctorate via the University of the West of England.

I have worked with Veterans in the local area and I have also worked with serving military at Tidworth Garrison, Wiltshire.

I am working in partnership with two Veterans' charities in Wales, Change Step and SSAFA, and I will be looking for participants for these treatment groups.

CRITERIA

Anyone who is a veteran of the British Armed Forces and is over the age of 18 can join the group. They must have PTSD. They should be able to attend all six sessions of the group which will run over six consecutive weeks in Brecon. All participants must come into the study via Change Step or SSAFA.

GROUP FORMAT

The groups will use Eye Movement Desensitisation Reprocessing therapy (EMDR) as the treatment of choice. This is a therapy that is recommended for treating PTSD. It is usually carried out on an individual basis but I have been using it in a group format in the NHS in England with good results.

There will be 10 maximum in the group. No one has to state what their trauma is. The group will run for 1.5 hours over six consecutive weeks and various questionnaires will need to be completed before each session.

FREE

SIX-WEEK TREATMENT FOR VETERANS WHO HAVE PTSD. THIS FREE PROGRAMME WILL TAKE PLACE IN BRECON STARTING SOON!

CRITERIA

- Veteran of the British Armed Forces
- Have PTSD
- Age over 18
- Be able to attend six sessions at 1.5 hours over consecutive weeks
- Are able to link with one of two Veteran charities in Brecon – Change Step or SSAFA – as extra support

TO JOIN

Please contact SSAFA or Change Step via the contact details (back page) who can then link you with me and I can then provide further information about this FREE treatment being offered on a group basis in Brecon.

JOIN THE GROUP FOR FREE

ssafa the Armed Forces charity

[redacted]

CHANGE STEP
Support for military veterans in Wales

[redacted]

UWE Bristol University of the West of England

Appendix 4 – PCL-5 Questionnaire

In the past month, how much were you bothered by:	*Not at all*	*A little bit*	*Moderately*	*Quite a bit*	*Extremely*
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again *(as if you were actually back there reliving it)*?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience *(for example, heart pounding, trouble breathing, sweating)*?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience *(for example, people, places, conversations, activities, objects, or situations)*?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world *(for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)*?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings *(for example, being unable to feel happiness or have loving feelings for people close to you)*?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "superalert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

PCL-5 (8/14/2013) Weathers, Litz, Keane, Palmieri, Marx, & Schnurr -- National Center for PTSD

Appendix 5 – PHQ-9 Questionnaire

PHQ- 9

	Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1	Little interest or pleasure in doing things	0	1	2	3
2	Feeling down, depressed, or hopeless	0	1	2	3
3	Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4	Feeling tired or having little energy	0	1	2	3
5	Poor appetite or overeating	0	1	2	3
6	Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7	Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8	Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9	Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3
		A11 – PHQ9 total score			☐

Appendix 6 – GAD-7 Questionnaire

GAD-7 Anxiety

Over the last 2 weeks, how often have you been bothered by the following problems? *(Use "✔" to indicate your answer"*	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Column totals: ___ + ___ + ___ + ___

= *Total Score* _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

Appendix 7 – WSAS Questionnaire

Work and Social Adjustment Scale (WSAS)

Mental health can affect one's ability to do certain day-to-day tasks in their lives. Please read each item below and respond based on how much your mental health impairs your ability to carry out the activity.

		Not at All		Slightly		Definitely		Markedly		Very Severely
1.	Because of my mental health my **ability to work** is impaired. '0' means 'not at all impaired' and '8' means very severely impaired to the point I can't work.	0	1	2	3	4	5	6	7	8
2.	Because of my mental health my **home management** (cleaning, tidying, shopping, cooking, looking after home or children, paying bills) is impaired.	0	1	2	3	4	5	6	7	8
3.	Because of my mental health my **social leisure activities** (with other people e.g. parties, bars, clubs, outings, visits, dating, home entertaining) are impaired.	0	1	2	3	4	5	6	7	8
4.	Because of my mental health, my **private leisure activities** (done alone, such as reading, gardening, collecting, sewing, walking alone) are impaired.	0	1	2	3	4	5	6	7	8
5.	Because of my mental health, my ability to form and maintain **close relationships** with others, including those I live with, is impaired.	0	1	2	3	4	5	6	7	8

Appendix 8 – Ethical Consent

(deleted due to containing personal information)

Appendix 9 – Consent Form

INFORMED CONSENT FORM

Title of Project: Does Eye Movement Desensitisation Re-processing (EMDR) work in a group format? A pilot study with military veterans in the United Kingdom

Name of Researcher: Sylvia Davies

	YES	NO
Have you read the Participant Information Sheet for the above study?		
Have you had the opportunity to ask questions and discuss the study?		
Have you received sufficient information about the study and satisfactory answers to your questions?		
Do you understand that the data you provide will be anonymised and used in future publications?		
Do you understand that your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without any penalty?		
Do you agree in taking part in the above study?		

Name of Participant (please print) _____

Signature _____ Date _____

Declaration by Researcher

I have given a verbal explanation of the research project, its procedures and risks and I believe that the participant has understood that explanation.

Name of Researcher (please print) _____

Signature _____ Date _____

Appendix 10 – Raw Data

(deleted in order to protect participants' identity)

Appendix 11 Draft (In Progress) Article

Does the EMDR-Integrative Group Treatment Protocol (EMDR-IGTP) work with military Veterans with PTSD in the United Kingdom?

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Authorship credit: Sylvia Davies instigated the research, delivered the intervention, and drafted the article; and gave final approval of the version to be published.

Christine Ramsey-Wade, Miles Thompson and Paul White contributed to design, analysis and interpretation of data, drafting the article and revising it critically.

Disclosure of Potential Conflicts of Interest: The authors declare no potential conflicts of interest.

Abstract

Background

Armed forces personnel are at risk of witnessing combat traumatic events and at risk of suffering the consequences of involvement. Improving treatment of PTSD for Veterans of conflicts is important to optimise treatment for sufferers. Eye Movement Desensitisation Reprocessing (EMDR) has been shown to be an effective intervention for military Veterans. The more cost-effective EMDR-Integrative Group Treatment Protocol (EMDR-IGTP) has also been tested in many RCTs, with good results to date – although it has not been tested with Veterans from different conflicts. The aim of this pilot study was to evaluate the effectiveness of the EMDR-IGTP in reducing PTSD symptoms in military Veterans in the United Kingdom.

Methods

A total of 36 participants who met the inclusion criteria were recruited in 2019. The EMDR-IGTP was used with six groups of military Veterans. Each group met once a week for six sessions. Questionnaires were completed by participants at every session. Only two participants did not complete the treatment.

Results

The EMDR-IGTP resulted in clinically significant reductions in PTSD symptoms for most participants.

Limitations

This was a small study with self-selecting participants, with no follow-up data, without a control or comparator group and conducted by the same experienced therapist.

Conclusions

The EMDR-IGTP can have a significant effect when used with this small group of military Veterans. These findings provide preliminary evidence for a novel, cost-effective way of treating Veterans with PTSD, paving the way for larger-scale studies.

Keywords: EMDR, PTSD, Veterans, Military, EMDR-IGTP, Group

Funding: This work was supported by the Veterans Foundation, which enabled the lead author (SD) to train in the specific protocol used in the intervention.

1. Introduction

In line with various campaigns across the world which argue that the word should be capitalised out of respect (e.g. Courtney, 2020; Keller, 2020), the term “Veterans” is capitalised throughout this article.

The UK Armed Forces Covenant stresses the importance of Veterans being able to access therapy and other social systems e.g. housing, medical support, jobs, etc, with priority (MOD, 2000). In the UK, treatment for military Veterans is in the political spotlight, with the British Royal Family (Prince William and Prince Harry) highlighting the needs of Veterans through the Invictus Games amongst other initiatives (Sherwin, 2014). The King’s Centre for Military Health Research has also been undertaking a major cohort study which has been running since 2003, with around 16,000 Veterans taking part since the study began. The main aim of the study had initially been to look at the health of those returning from specific operations but has since widened to look at what is happening to military personnel once they have left the Service.

Shapiro’s initial work designed EMDR as an individual psychotherapy, and most of the research on EMDR is as an individual treatment (Shapiro, 1995; Bleich et al, 2002; CREST, 2003; INSERM, 2004; VA/DoD, 2004 & 2010; Bisson et al, 2013; WHO, 2013; American Psychiatric Association, 2017; NICE, 2018). While there are challenges in delivering EMDR to a group, the standard EMDR protocol is interactive, as the practitioner monitors and guides the client, enabling for flexibility and adaptation. There are therefore a small number of studies evaluating EMDR as a group therapy. This has mainly involved large populations following shared traumatic events such as earthquakes. Here, the intervention has been an “early intervention”, i.e. the intervention has been delivered shortly after the group experienced the trauma – often within days (Fernandez et al, 2003; Jarero et al, 2009; Jarero

et al, 2010; Aduriz et al, 2009; Jarero and Artigas, 2012; Jarero and Artigas, 2014; Maslovaric et al, 2017). There are also a limited number of randomised controlled trials for EMDR with groups (Shapiro, 2018), and there are only two published studies that use group EMDR with established trauma (Allon, 2015; Carr, 2017). However, the work of Allon (2015) is in a non-military setting, and Carr (2017) is a feasibility and acceptability study for group EMDR with PTSD. Overall, though, this indicates that there is an increasing evidence base in support of EMDR for groups.

There are, however, limitations in the current research on group EMDR. As most of the research has been done as an early intervention following natural disasters or terrorism, it is not known whether the participants would have developed PTSD. Also, group EMDR has largely been delivered with specific populations e.g. in Mexico, and to different clinical and research governance standards (Jarero et al, 2009; Aduriz et al, 2009;Jarero et al, 2010; Jarero and Artigas, 2012; Jarero and Artigas, 2014).

Armed forces personnel are therefore at high risk of exposure to traumatic events, which could lead to them developing PTSD. EMDR has been shown to be an effective intervention for individual Veterans (Carlson et al, 1998; Silver & Rogers, 2002; VA/DoD, 2004, 2010; Russel, 2006). The aim of this research was to explore whether EMDR for PTSD is effective when used with a group of military Veterans. The hypothesis was that using a group EMDR protocol – the EMDR-IGTP - would lead to a clinically significant reduction in symptoms of post-traumatic stress by the end of the group intervention.

2. Method

2.1 Design

A pre-study effect size assessment for a paired samples design, conservatively informed by the proof-of-principle feasibility study, indicated that a standardized effect size of Cohen's $d = 0.6$ would not be unreasonable and effects of this order of magnitude or

larger would be needed for clinical significance. On this basis, a sample size of N = 32 would provide at least 90% power for detecting an effect (paired samples t-test, two-sided, alpha = 0.05). To account for data attrition, the target sample size was inflated to N = 36. The design therefore comprises a six-session intervention using the EMDR-IGTP, with repeated measures collected immediately pre-Session 1 – 5, and post Session 6, using validated questionnaires. Data was collected at six different time points with data being collected at the beginning of sessions 1-5 and the end of session 6.

2.2 Participants

To be considered eligible for participation in the group treatment, Veterans had to meet criteria for PTSD and the trauma had to be from a combat-related incident. Participants were excluded from the study if they had previously been treated with EMDR or were currently in other therapy. They were also excluded if they were assessed to be at high risk to themselves or others. Any interested participant who was not already linked with the two supporting military charities, Change Step and SSAFA, was asked to complete a further form, and this was passed onto the charity of their choice for further support. If an interested participant did not meet the threshold for PTSD, they were still referred to these charities or to NHS Veterans Wales (or other NHS veteran support if in England) for further support.

Recruitment was carried out in mid-Wales, United Kingdom, via advertising at local military events, social media and via two local military charities, as well as flyers handed out around the local barracks, library and other public buildings and emailed to Veteran groups in the area. Interested participants were then provided with the information sheet, and the consent form was discussed in more detail verbally prior to the first group attendance.

In total, 36 participants were recruited, of whom 34 completed the treatment programme. The overall sample size (N = 36) comprised of six groups of between 4 and 8 participants. The groups ran once a week, with the first starting in January 2019, and the final

one ending in August 2019. The groups were facilitated by the lead author (SD) with the support of two colleagues – both aligned with the supporting charities. The 36 participants comprised 34 males (94.5%) and two females (5.5%). The mean age was 39.75 years with a range of 22 to 58 years.

2.3 Intervention

> The EMDR-IGTP was used with all participants. Groups started to run when enough participants had expressed an interest in attending. Each group met weekly for six sessions, with each session lasting for one and a half hours. Each venue had tea and coffee facilities, so this was offered when people arrived to help create a convivial atmosphere while questionnaires were completed by everyone. Each venue was set up so that tables were put together, and everyone sat around these, while leaving plenty of space so that people felt comfortable. Tables were needed, as drawing is an element of the EMDR-IGTP. The questionnaires were administered at the start of every session except the final session, when questionnaires were completed at the end of the session to capture the full benefit (if any) of the intervention.

Participants were contacted by post one month after the final session of the group and asked to complete the measures again, to check if any intervention effects were sustained. Only one person returned the questionnaires, so this data cannot be analysed.

2.4 Adaptation of the EMDR-IGTP

The format for each group followed the EMDR-IGTP developed by Jarero and others (Jarero et al, 2009; Jarero et al, 2010; Jarero and Artigas, 2012; Jarero and Artigas, 2014). Historically, the EMDR-IGTP has been used as an intensive intervention – often over a couple of days or weeks immediately after a disaster. In many cases, people would have travelled miles to receive the treatment, so travelling back and forth each week would have

created an additional burden on participants. The EMDR-IGTP was further developed for established trauma, and research indicated that six sessions were ideal (Jarero et al, 2009). It was impractical for this study to take two or three full days to deliver an intervention – with room hire and time off work (if necessary). A weekly intervention was therefore timetabled over a period of six weeks (six sessions). The time of one and a half hours for this study was chosen as this was used in the feasibility study (Carr, 2017) and seemed enough, while reducing the pressure of extended travel time or time off work posed by a longer group session.

2.5 Measures and Data Collection

The Patient Health Questionnaire (PHQ-9). This has nine questions on depression and level of impairment (Kroenke et al, 2001). One question is about risk. The MCID (Minimum Clinical Important Difference) is 5 (Löwe et al, 2004).

The Generalized Anxiety Disorder Scale (GAD-7). This consists of seven questions on anxiety. Convergent validity of the GAD-7 is good, as demonstrated by its correlations with two anxiety scales: the Beck Anxiety Inventory (r=0.72) and the anxiety subscale of the Symptom Checklist-90 (r=0.74) (Spitzer et al, 2006). The MCID is 4 (Toussaint et al, 2020). The answer options range from 0 (not at all) to 3 (nearly every day). A total score is created by summing the items with a higher score, indicating a greater level of anxiety and worry. The GAD-7 scores are broken down as follows – 0-5 (no anxiety), 6-10 (mild anxiety), 11-15 (moderate anxiety), and 16-21 (severe anxiety) (see Spitzer, Kroenke, Williams & Lowe, 2006).

The PTSD Checklist. The PTSD Checklist for DSM-5 (PCL-5) is a 20-item self-report measure that assesses the presence and severity of PTSD symptoms. Items on the PCL-5

correspond with DSM-5 criteria for PTSD. There is no MCID for the PCL-5, but one previously recorded for the PCL-M was 10 (Stefanovics et al, 2018). The PCL-5 can be used to quantify and monitor symptoms over time, to screen individuals for PTSD, and to assist in making a provisional or temporary diagnosis of PTSD. Participants are asked to rate how bothered they have been by each item on a 5-point Likert scale ranging from 0-4. Items are summed to provide a total score. The answer options range from 0 (not at all) to 4 (extremely). A PCL-5 cut-point of 33 appears to be a reasonable value to use for provisional PTSD diagnosis and it has good reliability (Blevins et al, 2015). It follows DSM-V PTSD diagnostic criteria, and maps directly DSM-V (Wilkins, Lang & Norman, 2011). The internal consistency of it is satisfactory, with Cronbach's alpha ranging from 0.56 to 0.77 and mean inter-item correlations ranging from 0.22 to 0.73 for the four PCL-5 subscales and the PCL-5 total (Sveen, Bondjers & Wiullebrand, 2016).

The Subjective Units of Disturbance Scale (SUDs). This is a commonly used self-report measure of affective distress (Wolpe, 1969). It is used in EMDR therapy to quantify the client's report of reduced or eliminated disturbance. The score is out of 10, with 10 indicating high disturbance; the aim is for SUDS to reduce to zero by the end of processing. The SUDS have been tested for validity, demonstrating that SUDS ratings correlate with levels of current anxiety and depression (Kim, Bae & Park, 2008).

The WSAS (Work and Social Adjustment Functioning Scale). This is a simple reliable and valid measure of impaired functioning resulting from a health problem. The five WSAS items determine the following impairment dimensions: (1) work; (2) home management; (3) social leisure activities; (4) private leisure activities; and (5) relationships with others. Scores range from 0 to 40, with lower scores indicating better adjustment. Scores above 20 suggest moderately severe psychopathology, scores between 10 and 20 are associated with significant functional impairment but less severe clinical symptomatology,

and scores below 10 are associated with subclinical populations. Cronbach's alpha measure of internal scale consistency ranged from 0.70 to 0.94 (Mundt et al, 2002).

Therapist details and supervisory arrangements

All assessments as to suitability for the group were carried out by the lead author (SD), The groups were facilitated by the lead author and supported by two different colleagues over the course of the groups (the same colleague for each group). Supervision for the lead author was provided by another EMDR Consultant who also offered guidance on the group, and SD was also in regular discussion with her supervision team and with Dr Jarero, the author of the EMDR-IGTP protocol

2.6 Procedure

Procedures for Sessions

Session 1 - Psycho-education. This maps onto the client preparation and assessment stage of the eight stage EMDR protocol. The purpose of this session was to start to develop a good relationship within the group, help them feel comfortable and start to bond. Basic psycho-education of PTSD was taught. PowerPoint was used and copies of slides were given to everyone at the end.

Session 2 – Installation of Safe/Peaceful Place and Introduction to the AIP Model. The purpose of this session was to ensure that all participants could find a Safe Place/Peaceful Place. This is a term used in EMDR to ensure that all participants can find an imaginary or real place in their mind that they can go to if the trauma processing is overwhelming. It also helps provide a tool for them to use in-between sessions. Other techniques such as breathing, mindfulness and relaxation were also introduced in this session. Participants were introduced to the Adaptive Information Processing (AIP) model

Session 3 – Review of Safe/Peaceful Place and start of processing

The purpose of this session was to ensure that the participants were using what they were taught in the previous session and to start the processing. Processing started this session and was achieved by using the butterfly hug and/or self-tapping by the participants. Both processes involved participants tapping themselves to provide the bilateral stimulation needed for the EMDR. The butterfly hug was developed by Luciana Artigas, (Artigas et al, 2000) and is a way of carrying out bilateral stimulation in a large group. Another technique for bilateral stimulation was also offered (so participants could have a choice) which was developed by Elan Shapiro and participants tap their knees from left to right with their hand and follow this hand movement with their eyes, providing double bilateral stimulation (eye movement and tapping) (Lehnung et al, 2017). Only a few members of the groups used this, as most of them found the butterfly hug to be enough.

Sessions 4, 5 and 6 – Processing. These sessions followed the EMDR-IGTP protocol (Jarero, 2006)) and the participants continued processing their traumatic memories.

2.7 Ethical Issues

Ethical approval was first received on 31st October 2018 by the Health and Applied Sciences Faculty Research Ethics Committee at the University.

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3. Results

Two-pass data entry was undertaken to ensure coding fidelity and data veracity. Data validity checks were undertaken, and derived scale data was examined for the presence of any unduly influential observations. Cronbach's alpha (coefficient alpha) was calculated for each measure at baseline for comparison against published data. For PHQ, coefficient alpha

was estimated to be 0.904; for GAD, coefficient alpha was estimated to be 0.822; for PCL-5, coefficient alpha was estimated to be 0.948; and for WSAS, coefficient alpha was estimated to be 0.41 Cronbach's alpha for this ranged from 0.70 to 0.94. Analyses proceeded on an intention-to-treat basis. An assessment for missing data was undertaken, and the total amount of missing data was small, i.e. there was 100% data at baseline for every participant. Two participants missed Session 2 only, one participant missed Session 3 only, and one participant missed Session 4 only. In all these cases, non-attendance to a session was due to external factors (e.g. a doctor's appointment), and hence these data may be considered missing completely at random (Bennet, 2001). Two participants were lost to follow-up post Session 2 (i.e. 36 started the programme and 34 finished). Otherwise, all participants attending a session gave complete data. The percentage of missing data over the total was 5.66%, and entirely consistent with data being missing completely at random (MCAR). For these reasons, the data was analysed on an available case basis (Bennet, 2001).

For the derived scale data, an omnibus assessment of each measure over the study duration was undertaken using an analysis of variance for the one-way repeated measures design, and the first linear component used to examine linear trend. Specific changes in mean values was undertaken using a pairwise post-hoc application of the paired samples *t*-test. Cohen's *d* for repeated measures data was used to quantify standardized effect size. In general, absolute thresholds to help interpret the magnitude of effect are $d = 0$ indicates the absence of an effect, and for statistically significant effects $0 < d < 0.1$ indicates a trivial effect, $0.1 < d < 0.2$ indicates a small effect, $0.2 < d < 0.5$ indicates a moderate effect, $0.5 < d < 0.8$ indicates a medium size effect, $0.8 < d < 1.3$ indicates a large effect, $1.3 < d < 2.0$ indicates a very large effect, and $d > 2.0$ indicates a huge effect. The percentage of participants transitioning between clinical thresholds are reported to quantify clinical effect on well-being. 95% Clopper-Pearson confidence intervals for the percentage showing an

improvement over the study duration is given. The percentage of participants reporting a change equal to, or larger, than the MCID for each measure (where we have the MCID) is also given.

Table 1 gives the sample mean and sample standard deviation for each measure after each session. For each measure there is a noticeable decreasing trend after successive sessions (see Figure 1).

For PCL-5, an omnibus assessment of means using an analysis of variance for the one-way repeated measures design indicate statistically significance differences between at least two means - $F(5, 140) = 57.9$, $MSE = 69.5$, $p < .001$ and with a significant decreasing trend component over the course of the study - $F(1, 28) = 108.5$, $MSE = 178.2$, $p < .001$. For PCL-5, the mean after Session 2 is significantly lower than the corresponding mean at Session 1 ($p = .003$, $d = 0.44$), and this difference is maintained at Session 3 ($p = .022$, $d = 0.49$) but with no significant difference between Session 2 and Session 3 ($p = .391$, $d = 0.11$). However, mean PCL-5 is significantly lower at Session 4 compared with Session 1 ($p < .001$, $d = 1.33$), Session 2 ($p < .001$, $d = 0.77$) and Session 3 ($p < .001$, $d = 0.54$). Thereafter, the mean at Session 5 is significantly lower than the mean at Session 4 ($p < .001$, $d = 0.75$) and the mean after Session 6 is significantly lower than the mean at Session 5 ($p < .001$, $d = 0.85$). Overall, from Session 1 to the end of Session 6, there is a very large statistically significant decrease in mean PCL-5 ($p < .001$, $d = 2.72$), as shown in Table 1.

When viewed globally, an omnibus assessment of mean PHQ-9 using a repeated measures analysis of variance for the one-way design indicates a statistically significant difference between means $F(5, 140) = 95.5$, $MSE = 591.2$, $p < .001$ and with a significant linear component over the study duration, $F(1, 28) = 164.2$, $MSE = 16.1$, $p < .001$. For PHQ-9, mean values do not significantly decrease over Session 1, Session 2, and Session 3.

However, mean PHQ-9 is significantly lower at Session 4 compared with the previous three sessions ($p < .05$, $d = 0.78$), the mean at Session 5 is significantly lower than the mean at Session 4 ($p = < .001$, $d = 1.51$, and the mean after Session 6 is significantly lower than the mean at Session 5 ($p = <.001$, $d = 0.84$). Overall, from Session 1 to the end of Session 6, there is a very large statistically significant decrease in mean PHQ-9 ($p < .001$, $d = 1.98$).

In an omnibus assessment of means, mean GAD-7 significantly changes over the study duration, $\underline{F}(5, 140) = 110.9$, $MSE = 4.7$, $p < .001$) and with a statistically significant decreasing trend $F(1, 28) = 316.7$, $MSE = 6.9$, $p < .001$. For GAD-7, mean values at Session 2 do not significantly differ from the mean at Session 1 ($p = .797$, $d = 0.04$). Likewise, mean values at Session 3 do not significantly differ from the mean at Session 1 ($p = .797$, $d = 0.12$). However, mean GAD-7 is significantly lower at Session 4 compared with Session 1 ($p = <.001$, $d = 0.84$), Session 2 ($p < .001$, $d = 0.67$) and Session 3 ($p < .001$, $d = 0.79$). Thereafter, the mean at Session 5 is significantly lower than the mean at Session 4 ($p < .001$, $d = 1.47$), and the mean after Session 6 is significantly lower than the mean at Session 5 ($p < .001$, $d = 0.79$). Overall, from Session 1 to the end of Session 6, there is a very large statistically significant decrease in mean GAD-7 ($p < .001$, $d = 2.54$)

When viewed globally, an omnibus assessment of mean WSAS using an analysis of variance for the one-way repeated measures design indicates a statistically significant difference between means $F(5, 140) = 33.3$, $MSE = 3.6$, $p < .001$ and with a significant linear component over the study duration, $F(1, 28) = 69.7$, $MSE = 7.8$, $p < .001$. For WSAS, mean values between Session 1 and Session 2 ($p = 0.726$, $d = 0.04$), between Session 1 and Session 3 ($p = .344$, $d = 0.11$) and between Session 2 and Session 3 ($p = .124$, $d = 0.20$) do not significantly differ. However, mean WSAS is significantly lower at Session 4 compared with Session 1 ($p < .001$, $d = 0.56$), Session 2 ($p < .001$, $d = 0.69$) and Session 3 ($p < .001$, $d = 0.42$). Thereafter, the mean at Session 5 is significantly lower than the mean at Session 4 ($p =$

.001, $d = 0.46$), and the mean after Session 6 is significantly lower than the mean at Session 5 ($p < .001$, $d = 0.48$). Overall, as shown in Table 1, from Session 1 to the end of Session 6, there is a very large statistically significant decrease in mean WSAS ($p < .001$, $d = 1.40$).

For PHQ-9, the modal category after Session 6 is "Mild" compared with a modal category of Moderate/Severe prior to Session 1. Over the study duration, all 34 participants (100%) had lower PHQ-9 scores after Session 6 compared to study commencement (95% CI, 91.6% to 100%), with 31 (91.2%) having a better clinical outcome category (95% CI, 76.3% to 98.1%) after Session 6 compared with baseline, and 0 (0%) having a poorer clinical outcome category (95% CI, 0% to 8.4%)

For the PHQ-9, there are two non-completers, 32 with a clinical improvement when judged against the MCID, (88.8%, 95% CI 74.7% to 95.6%) and 2 with a change which does not meet clinical threshold.

For GAD-7, the modal category after Session 6 was "Mild" compared with a modal category of "Severe" prior to Session 1. Over the study duration, 33 participants (97.1%) had lower GAD scores after Session 6 compared to study commencement (95% CI, 84.7% to 99.9%), with 31 (91.2%) having a better clinical outcome category (95% CI, 76.3% to 98.1%) after Session 6 compared with baseline, and 0 (0%) having a poorer clinical outcome category (95% CI, 0% to 8.4%).

For the GAD-7, there are two non-completers, 33 with a clinical improvement when judged against the MCID (91.7%, 95% CI 78.2% to 97.1%) and 1 with a change which does not meet clinical threshold.

For WSAS the modal category was "Impaired" throughout the study but with "Severe" reducing from 19.7% after Session 1 to 0% after Session 6. Over the study duration, 32 participants (94.1%) had lower WSAS scores after Session 6 compared to study

commencement (95% CI, 80.3% to 99.3%), with 14 (41.2%) having a better clinical outcome category (95% CI, 24.6% to 59.3%) after Session 6 compared with baseline, and 0 (0%) having a poorer clinical outcome category (95% CI, 0% to 8.4%).

4. Discussion

The purpose of this study was to examine whether a group intervention – the EMDR-IGTP - was effective in treating Veterans with PTSD.

In the current study of predominantly male Veterans, the data showed statistically significant reduction in PTSD symptoms, depression symptoms, anxiety symptoms and symptoms relating to social functioning, from pre to post-treatment. All effect sizes between pre and post were large. These results support the primary hypothesis that using the EMDR-IGTP with Veterans with PTSD would result in clinically meaningful reductions in PTSD symptoms from pre to post-treatment, as the PCL-5 (the measure for PTSD) shows a large statistically significant decrease from Session 1 to Session 6 ($p < .001$, $d = 2.72$).

Overall, the primary outcomes from this study indicate that a group-based intervention using the EMDR-IGTP protocol to treat Veterans with military trauma can provide a clinically significant reduction in a range of psychological symptoms from pre to post-treatment.

Although the focus of this study was on treating PTSD, there is also a significant difference in the reduction on the depression scale (PHQ-9), the anxiety scale (GAD-7) and the WSAS.

The treatment outcomes from this current study add in important ways to the existing research literature on trauma-informed treatments for military Veterans. The recent NICE

guidelines for PTSD (NICE, 2018) no longer recommend EMDR for treating military trauma due to a lack of research to support this. This study adds to the body of research to illustrate that group EMDR can work with a military population.

Future Directions and conclusion

While these results are positive, it would be interesting to see if a larger research project - a Phase II RCT with a wait list control group to demonstrate efficacy - would reach the same findings - and/or a larger Phase III RCT using more than one therapist. It would also be interesting to do conduct a mixed design study, to get an understanding of participants' experiences of the group. There are often large waiting lists for therapy, with EMDR being a scarce resource in many psychology teams. EMDR has recently been downgraded (due to lack of evidence) in NICE Guidelines (NICE, 2018), so further research using this protocol could be carried out to expand the evidence base for EMDR and the use of EMDR for military trauma.

Limitations

This was a pilot study with a small number of participants. There was also no comparison group. Most of the participants were male and white.