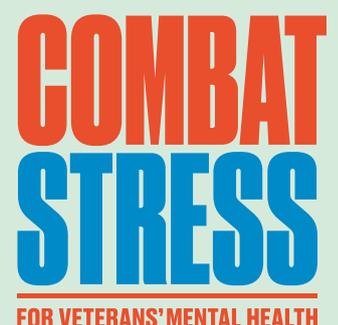


COMBAT STRESS RESEARCH: FIVE-YEAR SUMMARY

2014 – 2019



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INTRODUCTION

2019 will mark five years since the establishment of the Research Department at Combat Stress (CS). Led by Dr Dominic Murphy, working closely with the King's Centre for Military Health Research, the Research Team have an established record of producing high quality research which has direct relevance to CS veterans.

At the heart of all CS research is to further our understanding of how best to help veterans with mental health difficulties. This document summarises research activity from the past five years, which includes an overview of our three main areas of focus:

1. Evaluating Combat Stress treatment programmes
2. Population research: Understanding the needs of help-seeking veterans
3. Exploring new ways to support help-seeking veterans

Additionally, there is a summary of current and future areas of research, including some exciting new developments in complex-PTSD and supporting partners and families.

Output

Since 2014, the team has been directly involved in the production of **56 research papers**, which have been published in peer-reviewed journals. By publishing our findings, we are contributing directly to the evidence base about the effectiveness of treatments and the needs of the veteran population. In 2018, members of the Research Team were invited to be guest editors for a special edition of international journal Healthcare, looking at PTSD in veterans.

The Research Team has worked hard to secure a total of 15 high-profile funding grants from external organisations such as The Royal British Legion, Forces in Mind Trust, and Libor. In 2018 we won funding from The Royal British Legion for an investigation into the use of online webinars to deliver a support group for partners of veterans with PTSD. This followed a Forces in Mind Trust grant which funded a pilot study into the use of online video to deliver trauma focused psychological therapy to veterans with PTSD. The team continues to strive to secure funding for innovative projects with the aim of influencing and improving the support provided for veterans.

Dissemination

A key part of research at CS involves spreading the message about our findings, raising awareness of the mental health needs of veterans, and the work we do to support them. The Team regularly represent CS at national and international conferences, such as the King's College Veterans Mental Health Conference, and various events held by the UK Psychological Trauma Society. Members of the team are responsible for delivering teaching to Master's students regarding veterans' mental health. All this activity has enabled CS to forge a profile as an excellent research organisation.

Collaborations

The Research Team are proud to work in collaboration with many excellent research organisations across the world. The team works closely with the King's Centre for Military Mental Health, contributing to major

and high impact projects internationally. We also work in collaboration with academic institutions both in the UK and abroad, such as the University of Exeter, University of East London, Oxford University, Ulster University, Edinburgh Napier University and Anglia Ruskin University, Western University, Canada, and the University of Melbourne.

CS is also represented internationally through research collaborations with NATO, most recently investigating Personalized Medicine in Mental Health & Performance Research – Task Group 281.

The Research Team

A number of colleagues, past and present, have contributed to the success of the Research Team in the past five years. In alphabetical order, they are: Rachel Ashwick, Dr Walter Busuttill, Carron Carson, Kate Hill, Georgia Hodgeman, Ashleigh Madigan, Dr Dominic Murphy, Emily Palmer, Bethan Parry, Lucy Spencer-Harper, and Dr David Turgoose.

Acknowledgements

In addition to the team members, CS would like to acknowledge the contributions and support of all the veterans who have taken part in the research projects, as well as the many CS staff, academic and non-academic communities who have supported us.



The Research Team, L-R: Dr Dominic Murphy, Dr David Turgoose, Ashleigh Madigan, Nicola Saunders, Emily Palmer, Lucy Spencer-Harper

SUMMARY

Each section will include an overview of the key papers we have published in each area.

Section One of this summary looks at the effectiveness of CS treatment programmes and reports promising findings about the long-term positive impact of the treatments we offer. By working alongside clinicians in collecting outcome data, we will continue to evaluate our services to ensure we are offering the best possible interventions to our veterans. We also describe how by profiling the outcomes in more detail, we can see that some veterans show more improvements than others, suggesting that more work needs to be done to ensure we are helping all veterans who seek help for mental health.

Section Two summarises the large amount of research which has looked closely at the wide-ranging needs of the veteran population. The 2017 patient needs survey collected data from over 400 CS veterans, from which we have improved our knowledge in a number of key areas, such as alcohol misuse, anger, risk-taking, and obesity. This section also reports on some interesting developments in traumatic brain injury studies, which has become an increasingly common concern in recent times.

Section Three looks at ways in which CS has tried to improve access to mental health treatment, firstly by exploring barriers to treatment and referral patterns. Secondly, we report on new ways of delivering therapies, such as tele-therapy, and work with veterans' partners via The Together Programme. Both of these areas demonstrate the need to accommodate the changing needs of the

veteran population and their families and have the scope to lead to direct changes in the way that we offer services.

Finally, **Section Four** summarises the latest research activities and future directions, including exciting developments in Complex PTSD, the use of online webinars to support groups of veterans' partners, and investigating the feasibility of offering conjoint couples therapy to veterans and their partners.

Summaries of all Combat Stress research output can be found on the Research page of our website:

combatstress.org.uk/about-us/research

If you have any queries about research at Combat Stress, feel free to get in touch at dominic.murphy@combatstress.org.uk

COLIN'S STORY



I struggled with civilian life from the start – I found the transition very difficult. I missed the pattern and routine of life in the Army and didn't feel like anyone understood me.”

Colin joined the Ulster Defence Regiment when he was 18 years old and served for 18 years in Northern Ireland. After leaving the Army, he found life difficult, experiencing depression, anger, flashbacks and anxiety. It wasn't until he contemplated suicide that he made the call to us to ask for help. Colin is now a regional coordinator for our Peer Support Service.



SECTION ONE

Evaluating Combat Stress treatment programmes: Outcomes and experiences

Intensive Treatment Programme (ITP)

In 2015–16, research was conducted to investigate the effectiveness of the Intensive Treatment Programme (ITP) at CS. Using psychometric data collected by clinicians, findings showed that all mental health symptoms improved after completing the ITP, particularly for PTSD¹, and that benefits were maintained after a one-year follow-up period², suggesting that the ITP has a long-term impact on mental health outcomes.

Additional research showed that veterans who had higher levels of anxiety and dissociation before starting the ITP were less likely to show symptom improvements after completing the programme³. This suggested that there might

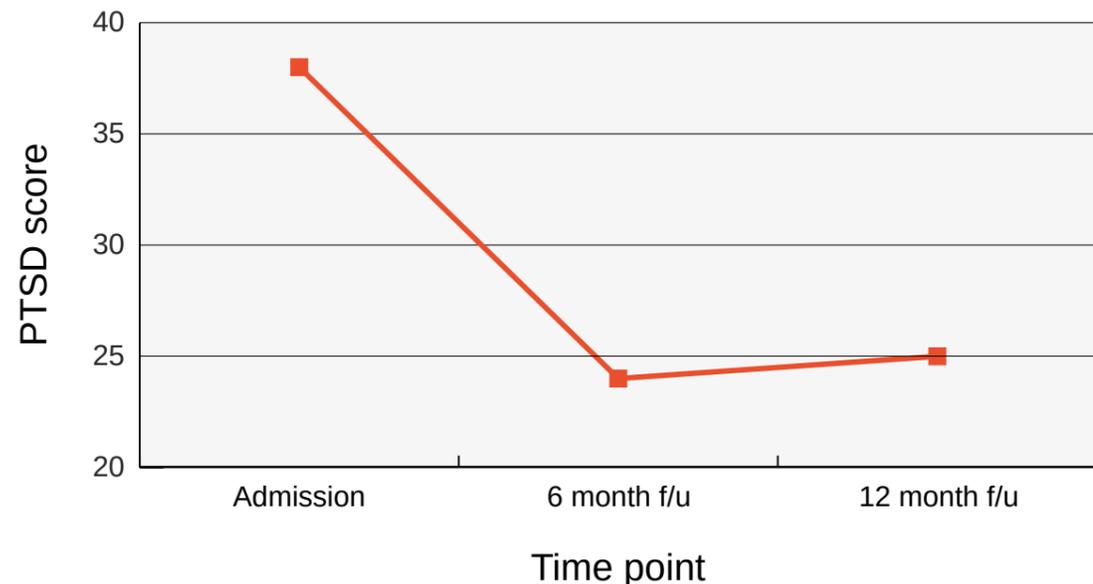
be sub-group of veterans with specific mental health needs who were less likely to benefit from the ITP.

A latent profile analysis was conducted using veterans who had completed the ITP, to investigate the different symptom profiles that veterans can present with⁴. The research found that over a third of veterans present with a 'severe' symptom profile, i.e. high levels of all PTSD symptoms. In total, there were six separate profiles of symptoms, which highlighted the variance in difficulties with which veterans can present, underlining the needs for interventions which can address the diversity of symptom presentations.

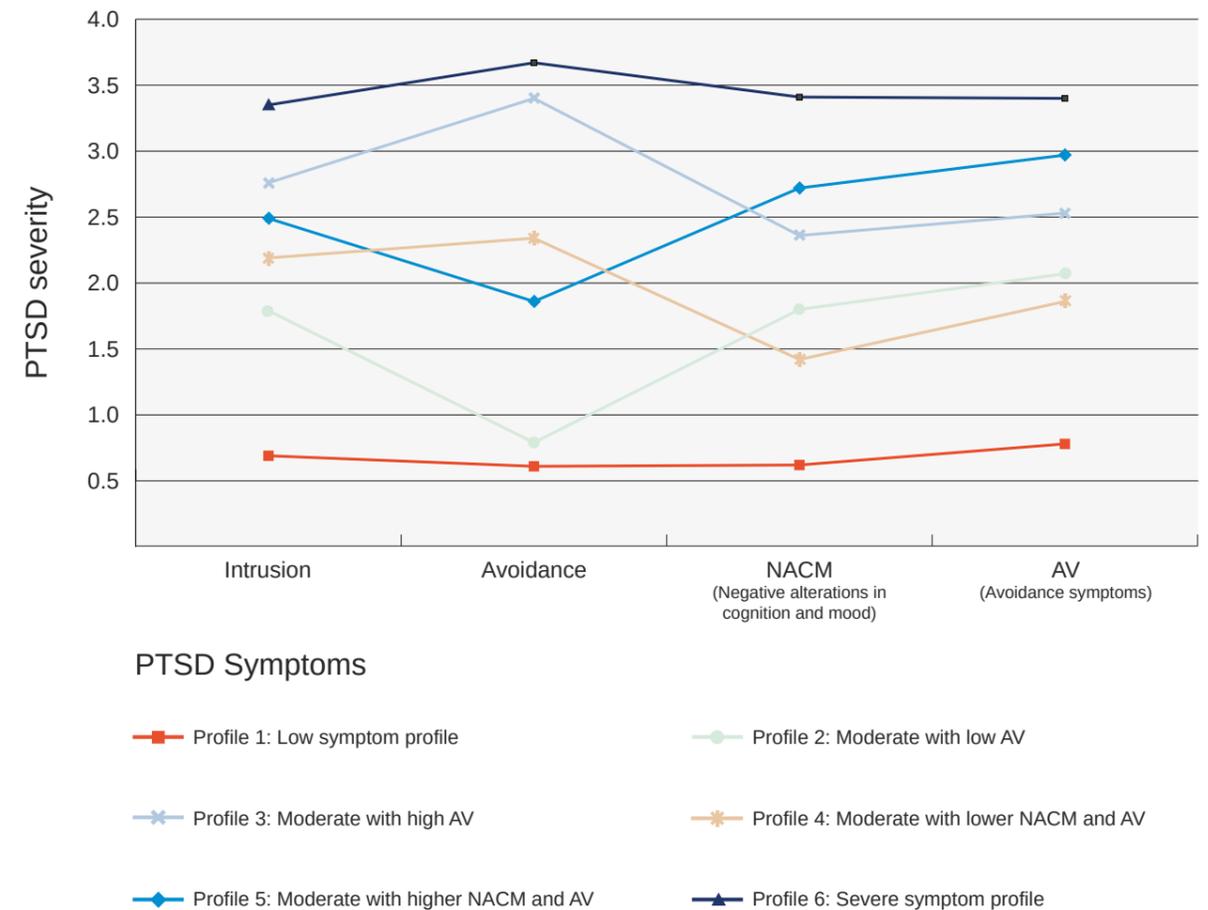
Anger Management Programme (AMP)

A 2015 study investigated the mental health of 172 veterans before and after they attended the AMP⁵. Significant reductions were seen in levels of anger and aggression

ITP outcome scores for PTSD



PTSD symptom profiles



upon discharge, with many veterans no longer meeting criteria for an anger problem. Reductions were also seen in symptoms of PTSD, depression and anxiety. However, some factors appeared to hinder mental health improvements in some veterans, such as unemployment.

Post-traumatic growth

As well as the clinical outcomes following treatment, we have also investigated the experiences of veterans following treatment for PTSD at CS. A 2016 study found that 37% of veterans showed positive growth in at least

one out of five areas, including: being open to new possibilities, relating to others, personal strength, spiritual change and appreciation of life⁶. Those who experienced this 'post-traumatic growth' appeared to show greater improvements in mental health. In follow-up interviews, veterans reported improvements in negative feelings and experiences, their appreciation of the world, ability to connect with other people and their sense of purpose in life⁷.

Veterans Substance Misuse Service

CS have also piloted a forensic substance misuse service in prisons, as veterans with

mental health difficulties are at higher risk of substance misuse and are over-represented in the prison population. Findings from research case studies have suggested that using a case management model is a feasible approach to delivering this service, with veterans being linked in to housing and employment services, as well as reporting improvements in mental health and substance misuse⁹.

Peer Support Service

Since 2017, CS has been providing a Peer Support Service to veterans, funded by The Royal British Legion. Evaluation of the service showed that 905 referrals were made during June 2017 – October 2018, and that veterans attended regardless of whether they had accessed CS treatment previously. Those referred to Peer Support groups were more likely to report loneliness and social isolation, but many reported benefiting from having meaningful interactions with other veterans in the groups. Veterans reported high rates of satisfaction with peer support. Over 80% of those surveyed would recommend the service to other veterans.

Summary

1. Veterans showed long-term mental health improvements after attending CS treatment programmes such as the ITP and AMP.
2. Veterans with higher levels of anxiety and dissociation before treatment were less likely to show significant improvements.
3. Some ITP veterans report experiencing post-traumatic growth, which was linked in some cases to greater mental health improvements.
4. Case management is a feasible approach for engaging veterans in substance misuse services.

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JOHN'S STORY



“

It was my wife Sue who knew something was wrong – she was the one who noticed the change in me when I retired.”

Army veteran John (pictured here with his wife of 43 years, Sue) joined up when he was 20 years old and served for 13 years. A successful career in the Police followed but when he retired, things started to come to the surface, more than 30 years after he'd left the Army. After treatment, he's a changed person and able to enjoy his retirement with Sue.

SECTION TWO

Population research: Understanding the needs of help-seeking veterans

Patient Needs Survey

Until recently, little was known about the wider demographic, mental health and physical health profile of help-seeking veterans. To address this, a large-scale survey was conducted with a random sample of CS veterans, who completed a range of measures relating to mental and physical health. This was the first study of its kind in the UK to explore the needs of veterans seeking help for mental health difficulties in a nationally representative sample. A series of papers have been published describing the needs of veterans using the data from this survey.

Mental health

A mental health profile of help-seeking veterans demonstrated that 82% met criteria for PTSD, 74% for anger, 72% for common mental health difficulties (anxiety and depression) and 43% for alcohol misuse. In addition, 32% of the sample experienced comorbid difficulties, with anger and PTSD the most commonly reported⁹.

The impact of PTSD has also been explored, in terms of functional impairment e.g. relationships, employment and hobbies⁹. Findings showed that some core PTSD symptoms were related to problems with day-to-day functioning such as close relationships, suggesting that targeting these core symptoms could help with day-to-day functioning, and also raises awareness that

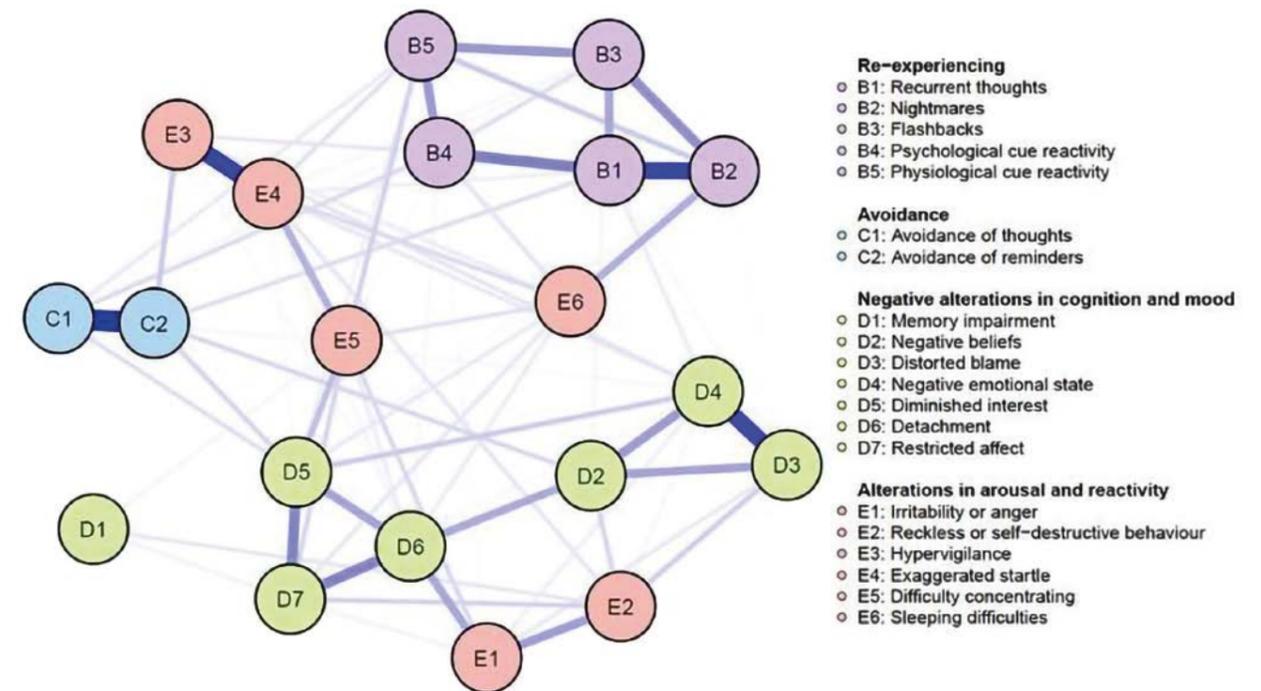
some veterans with these symptoms could be having difficulties in other areas.

CS research has also looked at suicidality in veterans, with some risk factors associated with being in the military identified, such as having a lower rank and leaving the service early¹⁰. Further investigation found that suicidal ideation was significantly higher in veterans who were unemployed, early service leavers, or had a history of childhood adversity. However, suicidal ideation was not associated with mental health difficulties.

CS has previously investigated the accuracy of different self-report measures for PTSD¹¹, to ensure that the measures in general use are accurate when used in the veteran population. We have also published two editorials describing current issues regarding the mental health of treatment-seeking veterans, including different mental health presentations, factors that predict mental health difficulties, and barriers to seeking help for mental health^{12, 13}.

By using new methods for analysing mental health symptoms, a recent paper examined how different symptoms of PTSD in veterans cluster and interact together. This network analysis showed that the most central symptoms of PTSD were recurrent thoughts, nightmares, negative emotional state, detachment and exaggerated startle response. Functional impairment was related to a number of different PTSD symptoms. Impairments in close relationships were associated primarily with the negative alterations in cognitions and mood symptoms and impairments in home management were associated primarily with the re-experiencing symptoms.

Network analysis of PTSD symptoms



Ross et al. (2019). A network analysis of DSM-5 posttraumatic stress disorder and functional impairment in UK treatment-seeking veterans. *Journal of Anxiety Disorders*, 57.

Differences between UK nations

In order to more fully understand the needs of help-seeking veterans across the UK, a comparison was conducted between different UK nations¹⁴. It was found that the demographics and health presentations of help-seekers varied by area of residence. For example, help-seeking veterans in Northern Ireland tended to be older, had experienced less childhood adversity, joined the military after the age of 18 and took longer to seek help. Scottish and Welsh veterans had a higher risk of smoking and alcohol misuse. However, no differences were found in mental health presentations across nations.

Risk-taking behaviours

Past research suggests that military veterans can be more likely to engage in risk-taking behaviours, such as heavy smoking, alcohol misuse, dangerous driving and fighting. CS analysis determined several factors that increased a veteran's risk of engaging in risky behaviours, including being in a relationship, being younger, meeting criteria for PTSD and common mental health difficulties, and having a traumatic brain injury¹⁵. PTSD symptoms of hyper-arousal and negative alterations of mood and cognition were the greatest predictors of risk-taking.

Risk-taking behaviours in veterans with PTSD

Risk-taking behaviour	n	Percentage (%)
Type of behaviour		
Heavy drinking	162	40.2
Smoking	62	15.4
Fighting	314	77.9
Driving	29	7.2
Any	350	86.8
Number of behaviours		
0	53	13.2
1	181	44.9
2	123	30.5
3	44	10.9
4	2	0.5

Anger and aggression

A recent study found that prevalence rates for significant anger and aggression were 74% and 28% respectively in CS veterans¹⁶. Both women and those over 55 were less likely to report anger difficulties. Those with high levels of PTSD and other mental health difficulties were more likely to report anger and aggression. Other factors related to anger and aggression included unemployment due to ill health, and a perceived lack of family support. The associations between anger, aggression, and other variables has implications for the assessment and treatment of military veterans.

Alcohol use

Data on veterans' alcohol use showed that CS veterans had a different pattern of alcohol misuse compared to the wider UK Armed Forces and the general public, being more likely to report alcohol dependence and alcohol-related harm¹⁷. Those with greater alcohol misuse were more likely to report mental health difficulties and functional impairment, whereas those who were unemployed and in the older age categories had fewer difficulties. The findings suggested that we could improve our screening processes to ensure we identified those with additional needs relating to alcohol misuse

more easily and offer appropriate treatments and support.

An earlier large-scale study looked at differences in severity of alcohol misuse between veterans and non-veterans admitted to hospital over an 18-month period, finding that that in terms of severity there were no differences between veterans and non-veterans¹⁸. Veterans were more likely to report with physical health problems before going on to get support for alcohol use.

Physical health and traumatic brain injury

Risk factors for obesity such as unemployment and poor sleep have been found previously in veterans, so a CS study was carried out using Body Mass Index (BMI) to investigate obesity risk in CS veterans¹⁹. It was found that over 70% of participants were either overweight or obese, with those with higher levels of anger, anxiety and depression being more likely to have a high BMI. These findings show the importance of integrating mental and physical healthcare for help-seeking veterans.

Research has shown that a large proportion of Iraq and Afghanistan veterans have reported sustaining a traumatic brain injury

(TBI). It is believed that the rate of mild TBIs (mTBI) is greater than records suggest due to under-reporting. CS has published two reviews looking at the current evidence about mTBI in military populations^{20, 21}. Also, a recent CS study has found that 72% of a sample of CS veterans reported at least one mTBI in their lifetime from blunt and/or blast injuries²². Furthermore, it was found that vestibular dysfunction (a series of functions relating to motor control, interoception and spatial cognition often associated with TBI) was associated with symptoms such as headaches, sleep problems, and functional disability²².

Summary

- A large survey undertaken in 2017 investigated the wider needs of help-seeking veterans.
- Data was used to investigate issues relating to mental health, alcohol use, anger and aggression, brain injury, and obesity.
- There are demographic and health differences in the profiles of help-seeking veterans in the different UK nations.
- PTSD symptoms of hyperarousal and negative changes on cognitions were linked to increased risk-taking behaviours.

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SECTION THREE

Improving access to treatment and exploring new ways of supporting the population

Help-seeking and stigma

For some veterans, getting help for mental health difficulties is hard. CS has conducted research to investigate patterns of help-seeking and what barriers might exist to accessing support. A series of research papers published between 2014–2017 found that for some veterans, mental health stigma is a major barrier to accessing support²³⁻²⁵. Other issues included not recognising the problem, holding negative beliefs about oneself, practical challenges of attending

appointments and negative beliefs about health services. Some enabling factors were discovered which increased likelihood of engagement, such as having social support and being seen by a veteran-specific service.

Referrals and pathways

In order to explore how many veterans are accessing support from CS, research was conducted which investigated patterns in referrals over a 20-year period (1994–2014)²⁶. It was found that referrals to CS had increased fourfold over these 20 years, suggesting that more veterans are seeking help for mental health problems than before.

Further research has recently shown that more Armed Forces personnel than expected were seeking help for mental health²⁷. It is

possible that, over time, attitudes towards help-seeking are changing in military populations which, along with more visible services being available, are helping to increase the number of veterans who are accessing support.

New ways of delivering interventions

Despite the increase in veterans seeking support for mental health, there remain many who are unable to access help. For some, practical barriers such as travel, work and family commitments prevent them from attending CS treatment centres or dedicating the time to complete the ITP.

Research at CS has explored new ways of delivering services to increase access to veterans. One approach is to use internet-based video to deliver psychological therapies, also known as tele-therapy. A pilot study in 2018 investigated the feasibility and acceptability of tele-therapy with CS veterans²⁸. Uptake and attendance rates suggested it was a feasible approach, with results also showing that PTSD and other mental health symptoms reduced after receiving the intervention. Qualitative analysis suggested that veterans found tele-therapy to be an acceptable method of treatment delivery, as well as giving useful feedback on its pros and cons²⁹. Prior to conducting the pilot study, a systematic review was conducted and published in 2017, which outlined the evidence and lessons learned from previous studies reporting on the use of tele-therapy for veterans in other countries³⁰. Findings from this research have been used to inform the roll-out of a new service using Skype to deliver therapies to CS veterans.

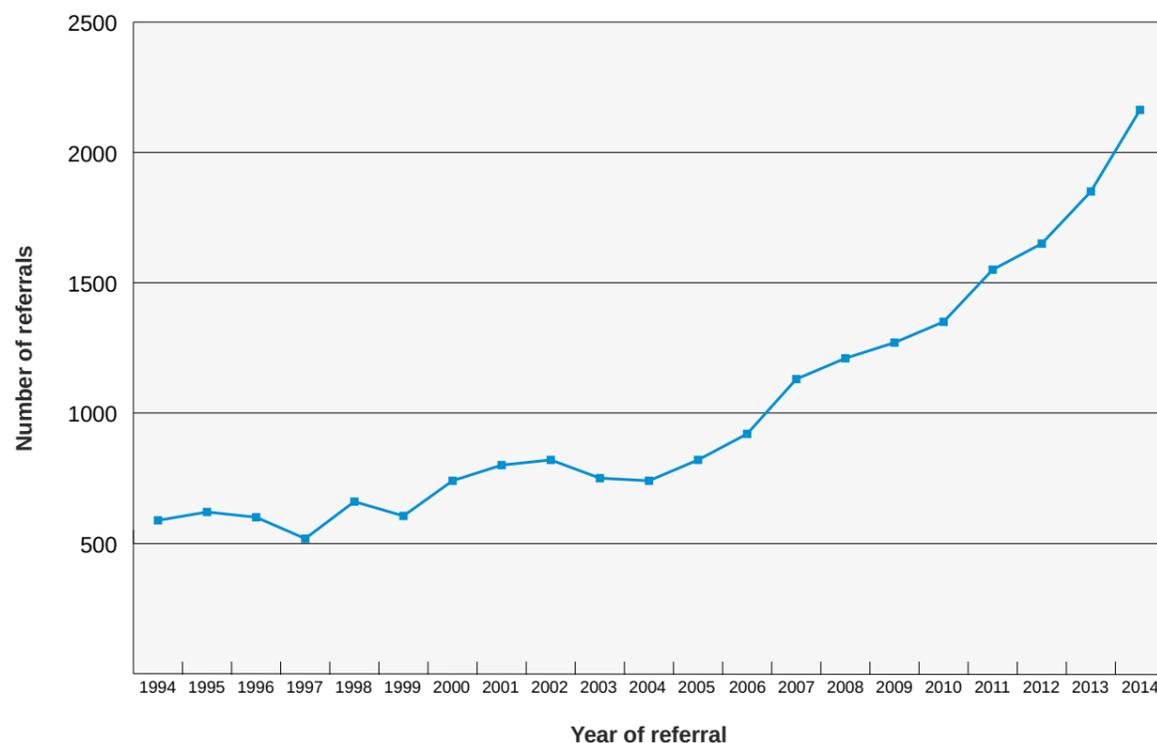
Research has also investigated ways of adapting existing trauma-focused therapies offered at CS. A 2016 case study demonstrated that imaginal exposure methods can be used for veterans who experience significant avoidance or dissociation during reliving exercises, showing that existing methods can be adapted to suit the needs of veterans accessing therapy at CS³¹.

Partners and carers

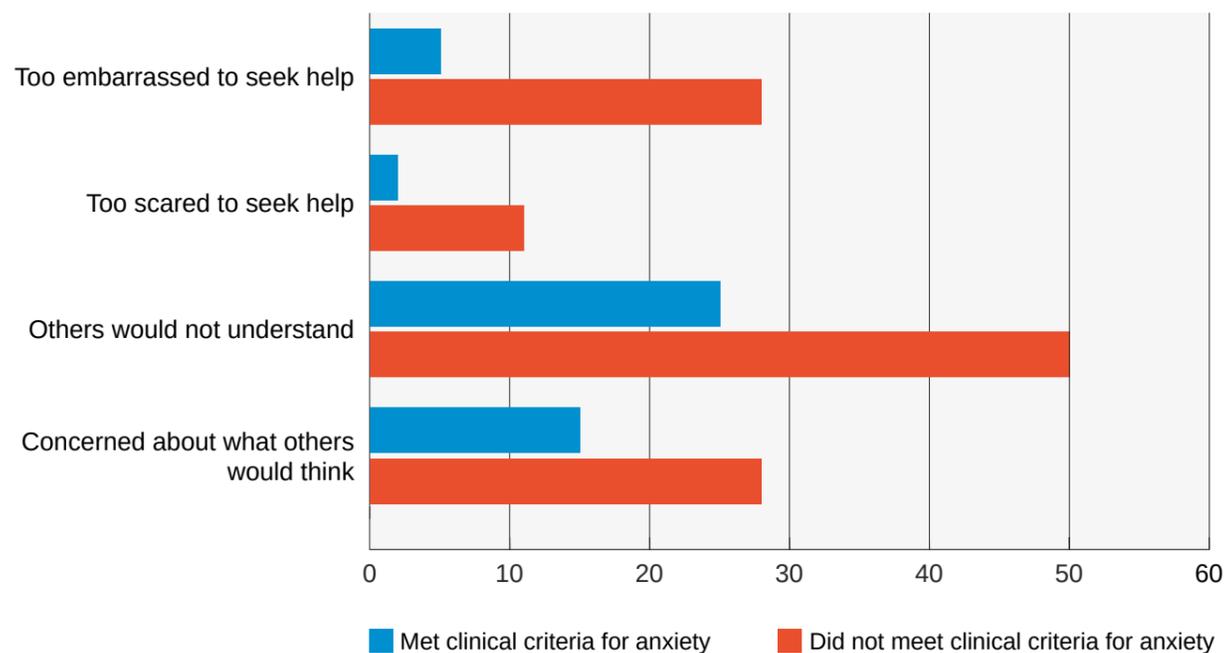
Research suggests that the well-being of family and friends is important in the recovery pathway for veterans with PTSD. CS research has also shown that veterans' partners themselves are at increased risk of having mental health difficulties, and also experience similar barriers to help-seeking such as stigma³².

A further qualitative study explored the experiences of partners living alongside PTSD with their veteran partner. Findings showed that partners have their own needs as a result of PTSD in veterans, and that they would value tailored support for partners³³. A systematic review of interventions available to partners has been completed and is due to be published later this year.

Referral rates to CS between 1994 and 2014



Barriers to help-seeking in veterans' partners



Based on these findings, CS developed a group programme called The Together Programme, which was piloted in 2018 in locations across the UK. The group included psychoeducational materials about PTSD, the impact of living alongside mental health difficulties, and self-care strategies for partners. Findings showed that 94% of partners were extremely likely to recommend The Together Programme to family and friends³⁴. Additional qualitative analysis showed that partners reported experiencing self-growth during the programme and being more able to connect with others³⁵.

Summary

- For some veterans, stigma about mental health is a barrier to seeking help. There is some evidence however that this trend could be improving.
- CS is developing new ways of offering interventions to make them more widely accessible.
- A pilot trial of tele-therapy suggested that online video is a feasible and acceptable alternative to face-to-face therapy. There was some evidence also that it is effective in reducing mental health symptoms.
- The Together Programme was developed to provide psychoeducational support for partners of veterans with PTSD. Participants gave positive feedback about the impact of the group.

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SECTION FOUR

At CS we are always looking for innovative ways of investigating the needs of help-seeking veterans. As well as the research summarised here, there are a number of on-going projects as well as new areas we hope to explore.

Current projects and collaborations

Complex PTSD

A current CS project, in collaboration with Edinburgh Napier University and Forces in Mind Trust (FiMT), is aiming to explore the nature and extent of PTSD and Complex PTSD (C-PTSD) in treatment-seeking veterans as per the new interim of the World Health Organisation diagnostic criteria (ICD-11).

The specific aims of the study are threefold, firstly to determine how presentations vary between PTSD and C-PTSD; secondly, to assess the reliability and validity of the International Trauma Questionnaire in military veterans; and thirdly, to qualitatively explore if treatment seeking veterans with C-PTSD experience any different challenges to accessing and engaging with services compared with veterans with PTSD. Findings will allow us to better understand different PTSD presentations in the population and to tailor our treatment approaches accordingly.

Supporting veterans' partners

Building on previous research piloting a psychoeducational support group for veterans' partners (The Together Programme, described in Section Three), CS is increasing access to the programme by delivering it via online webinars.

The study has been designed as a randomised controlled trial (RCT) in order to determine how effective the intervention is in reducing mental health difficulties in partners. Given the success of the pilot and the positive feedback received, we are hoping that more partners will be able to access it in the webinar format.

Improvements in service delivery

A series of on-going qualitative projects are aiming to explore the effectiveness and accessibility of CS treatment programmes. Firstly, we are investigating whether veterans from Commonwealth countries who reside in the UK face any additional barriers to accessing help. The information gathered from these veterans will also be used to explore the prevalence of C-PTSD in this subgroup of veterans.

We know from quantitative analyses that many veterans show significant improvements in mental health following the completion of the ITP, as described in Section One. In order to investigate this further, a sample of veterans are being interviewed about their experiences of the ITP to explore what additional factors facilitated their improvement. Additionally, we are exploring the pros and cons of delivering a service within a residential setting. These findings will hopefully allow us to improve the treatment programmes to ensure they are as effective as possible.

Increasing knowledge of veterans' mental health

CS is working in collaboration with other organisations internationally to develop a data set which captures the mental health

and psychological needs of help-seeking veterans. This is being completed in collaboration with colleagues from Veterans centres in Australia, Canada and the UK.

CS is part of an international project investigating moral injury in veterans with PTSD. The International Moral Injury Consortium Study is being led by the Boston Veterans Affairs Mental Health Team. Moral injuries can occur when an individual is exposed to events which transgress deeply held moral beliefs or expectations. The research has involved interviewing veterans and clinicians to understand more about moral injury and to help validate a self-report tool to measure it.

Future directions

We are always developing new ideas for research projects which will help to increase our understanding of help-seeking veterans and of innovative ways to support them and their families. In the coming months and years, the Research Team is looking forward to delivering some exciting new projects.

Building on the current research into C-PTSD, we are hoping to develop a trial to test the feasibility and effectiveness of a treatment intervention for C-PTSD. This would allow CS to explore whether those veterans with more complex PTSD difficulties would benefit from treatments different from those we currently offer, and in what ways.

Similarly, there are plans in place to pilot an intervention which would tackle issues relating to moral injury.

As well as developing projects to help veterans' partners, future research will address the needs of the wider family too, particularly children. Research will investigate the needs of children where one or both parents are veterans with PTSD, as well as what impact this might have on their own psychological well-being. Further to this, we hope to gain funding to develop online psychoeducational resources to be made freely accessible to veterans and families to provide support for issues around PTSD.

Further studies planned include an investigation into the use of a mobile app to support veterans with alcohol misuse; designed as a preventative measure to intervene before difficulties with alcohol escalate. This will be in collaboration with King's College London who has developed the app. CS is also looking to investigate veterans' journeys through the healthcare system, in comparison to non-veterans, to identify which services they are more likely to engage in and receive help from. Finally, CS is planning a collaboration with the University of the West of England to look at the impact of facial scarring injuries in veterans and impact on mental health.

CS has an on-going commitment to conducting pioneering research into veterans' mental health, as demonstrated by the myriad of projects outlined here. With continued support and collaborations with other organisations we hope to continue to make telling academic contributions to the field of veterans' mental health.

COMBAT STRESS RESEARCH GOALS

- Continue to evaluate our treatment programmes to ensure veterans are receiving the most effective care.
- Trial new and innovative ways of delivering treatments to ensure as many veterans who seek help can access what they need.
- Continue to explore the specific challenges facing help-seeking veterans in order to understand their needs.
- Explore ways of providing help for veterans' families.
- Trial new treatment interventions to make sure we are adapting to meet the changing mental health needs of veterans.
- Continue to widely disseminate our findings via journal publications and conferences to spread the message about our research and the needs of help-seeking veterans.

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Papers currently under review / awaiting publication

- Systematic review of interventions for supporting partners of military veterans with PTSD.
- Physical health amongst veterans who have sought treatment for mental health difficulties.
- Comparing the profiles of UK and Australian veterans supported by national treatment programmes for PTSD in their respective countries.
- ICD-11 CPTSD is more common than PTSD in military personnel: Results from a treatment seeking sample.
- Identifying military veterans in a clinical research database using natural language processing.

Here are some of the research partners we collaborate with:



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