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PTSD Treatment Response in Military Populations

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This issue of the *PTSD Research Quarterly* provides a bibliography on treatment response in Veterans and active-duty Service members. Practice guidelines for PTSD are highly similar in recommending trauma-focused psychotherapies, such as Cognitive Processing Therapy (CPT), Prolonged Exposure (PE), and Eye Movement Desensitization and Reprocessing (EMDR), and select medications for the treatment of PTSD in adults regardless of population (Hamblen et al., 2019). One exception is the guideline from the National Institute for Health and Care Excellence (2018) in England, which recommends EMDR only for non-combat-related PTSD given the Institute's finding of a lack of efficacy for EMDR in combat-related PTSD. And although the guideline produced by the International Society for Traumatic Stress Studies does not include specific recommendations regarding combat trauma, a review of the psychotherapy literature performed for the guideline found that none of the treatments could be recommended as strongly for combat-related PTSD as for non-combat-related PTSD (Kitchiner et al., 2019).

Observations that individuals with military experience might have a lessened treatment response go back to at least 2005 with the publication of a meta-analysis of psychotherapy for PTSD that found studies of combat Veterans had smaller effects relative to studies of survivors who had experienced other types of traumatic events (Bradley et al., 2005). Shortly thereafter, Friedman et al. (2007) published a study that failed to find a benefit of sertraline for the treatment of PTSD in a sample of patients receiving care in the Department of Veterans Affairs (VA).

The study was one of four conducted to support an application by the drug company Pfizer for an indication of Zoloft (sertraline) for PTSD, which was approved in 2000 (Henney, 2000). Only two of the trials found Zoloft to be superior to placebo (www.accessdata.fda.gov/drugsatfda_docs/nda/99/19-839S026_Zoloft_corres.pdf), both in mixed civilian samples with a high percentage of women. Although one of the negative trials was also in a mixed sample, Friedman et al. (2007) suggested that their results might reflect the treatment refractoriness and complexity of VA patients who remained in treatment so long after their war experiences.

Friedman et al. (2007) also made a distinction important for understanding treatment response among individuals with military experience. Participants in the trial with combat-related PTSD had worse clinician-rated PTSD outcomes relative to participants with non-combat-related PTSD. Veterans and Service members, regardless of their exposure to combat, may have PTSD due to non-combat military traumatic events or to events that happened before or after the military. Also, Veterans and Service members differ in multiple demographic ways, and most Veterans, even those with PTSD, do not use VA healthcare, so results from a study of VA patients may not generalize to all Veterans or Service members. It is necessary to keep these distinctions in mind when reading the literature on treatment response in military samples. Also, there have been very few randomized controlled trials (RCTs) focused on Service members alone or that enrolled both Service members and Veterans, so most meta-analyses that refer to "military" samples are actually referring to Veteran samples.

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State of the Evidence

There are three types of studies that address the question of whether treatment response in military samples differs from response in non-military samples: meta-analyses in studies of participants with military experience, meta-analyses that examine whether outcomes vary as a function of military experience, and direct comparisons within a single study of participants with and without military experience. Both direct comparisons and meta-analyses with military versus non-military comparisons yield the strongest inferences. Direct comparisons can control for possible sources of variation between military and non-military studies, such as enrollment criteria, therapist training and experience, and treatment settings. Meta-analyses that compare military and non-military groups, unless based on patient-level data, can only adjust for possible differences in patient characteristics and other factors at the study level, so they may seem less precise than direct comparisons. However, meta-analyses are based on multiple studies, which can enhance the robustness of the findings. Direct comparisons have limited generalizability to the extent that there are few studies—and there are few. Consequently, both types of studies yield valuable information. Meta-analyses of studies of participants with military experience, such as that by Kitchiner et al. (2019), are less informative because they do not provide a test of the effect of military service but are still useful as supporting evidence. One caveat about meta-analyses is that they typically review the same literature, with some variation in included studies. Therefore, they cannot be interpreted as independent replications. Consistency of findings across meta-analyses of the same literature is to be expected.

Almost all meta-analyses of treatment outcome in military samples have focused only on psychotherapy. One exception is a study by Stewart et al. (2009), who found that medication had greater benefits than psychotherapy, but the study is difficult to interpret because it included both randomized clinical trials and uncontrolled observational studies and also included few studies of psychotherapies that were recommended in practice guidelines at the time. Among the meta-analyses of psychotherapy, the typical finding is that treatment is effective, but appears to be less so than in studies of non-military participants (Goodson et al., 2011; Haagen et al., 2015; Kitchiner et al., 2019; McLean et al., 2022a). Perhaps the most widely cited meta-analysis of psychotherapy in military samples is a review by Steenkamp et al. (2015), who found that recommended trauma-focused treatments such as PE and CPT had large average improvements in participants with military-related PTSD, but that categorical indicators of clinical improvement were lacking for many participants. An updated review by Steenkamp et al. (2020) adds similar evidence and finds similar conclusions.

Most meta-analyses that have compared outcomes between military and non-military participants have found that treatment outcome is reduced in military samples (Bradley et al., 2005; Hamblen et al., 2022; McLean et al. 2022b; Straud et al., 2019; Watts et al., 2013; Weber et al., 2021). There are exceptions. Bonfils et al. (2022), who studied the effect of psychotherapy for PTSD on functioning, reported that outcomes did not differ between studies of participants with military experience and participants with non-specified traumatic exposure (mixed samples), and that both groups had superior outcomes relative to participants with specified events (including refugees, disaster survivors, first responders, and those with PTSD secondary to a medical illness). Also, Jericho et al. (2022), in a meta-analysis

of trauma-focused psychotherapy, and Kline et al. (2018), in a meta-analysis of long-term outcomes of psychotherapy, failed to find differences between military and non-military samples.

There are very few individual studies with direct comparisons of PTSD treatment outcomes in military versus non-military participants. Typically, these are moderator analyses performed as secondary analyses, and consequently are not well-powered. An example of a well-powered study is one by Jacoby et al. (2022), who compared 188 military and 314 non-military participants receiving PE or CPT as part of the STRONGSTAR Training Initiative to implement evidence-based care in the community (Dondanville et al., 2020). Despite using standardized enrollment criteria, the investigators found that the military and non-military samples differed in numerous ways, e.g., over 70% of the military participants were male and over 70% of the non-military participants were female. Non-military participants were younger, less racially diverse, less likely to be married, less educated, and less likely to be treated in an inpatient setting relative to their military counterparts. After adjusting for these covariates, the investigators found both groups had large improvements in PTSD and depression, but that the non-military group had greater improvements. Another example of a well-powered study is one by Dillon et al. (2019), who reported findings similar to Jacoby et al.'s in 63 military and 136 non-military patients who received CPT from community providers. PTSD and depression improved in both groups, but the improvement was greater in the non-military group.

Possible Explanations for Differences Between Military and Non-Military Samples

There are several reasons why individuals with military experience might have lesser response to PTSD treatments relative to individuals without military experience. Citing meta-analyses that found worse PTSD treatment outcomes for military versus non-military populations (Bradley et al., 2005; Watts et al., 2013), Steenkamp et al. (2015) suggested that the prolonged and intense nature of deployment trauma may require different treatment approaches than are currently used, such as non-trauma-focused therapies. The meta-analysis by Watts et al. (2013) suggests that using different psychotherapies is not the entire answer, however. Watts et al. found that a higher percentage of Veteran participants was associated with lower effect sizes in both medication and psychotherapy trials.

The current literature does not permit a definitive conclusion about whether combat trauma is especially difficult to treat because there has been insufficient attention to characterizing traumatic exposure and the focus of treatment. As noted above, even individuals deployed to a warzone may have PTSD due to a non-warzone event that occurred before, during, or after the military, and even those with warzone-related PTSD may choose to focus on a non-warzone or non-military event in psychotherapy. A meta-analysis of psychotherapies for PTSD by Straud et al. (2019) is an exception to studies that have failed to distinguish military experience from trauma type. Straud et al. reported that military samples had worse outcomes than non-military samples and that combat and assault trauma samples had worse outcomes compared to mixed trauma samples. However, because these factors were not combined to examine joint effects, the study does not conclusively answer the question of whether warzone exposure, military service, or both experiences led to worse outcomes.

Other factors that may explain differences in PTSD treatment outcome between military and non-military populations include sample characteristics, such as the percentage of women, which is higher in nonmilitary samples (e.g., Jacoby et al., 2022). Meta-analytic findings show that women have better PTSD treatment response than men (e.g., Wade et al., 2016). Watts et al. (2013) also reported that the percentage of women in the studies included in their meta-analysis was associated with better outcomes in both medication and psychotherapy trials, but this effect was observed in a multivariate analysis that adjusted for the percentage of Veterans. This suggests that gender differences may not account for the difference in outcome between military and non-military samples. Another possible explanation is the chronicity and complexity of VA patients (Friedman et al., 2007), but this possibility has not been determined.

Conclusions

The available evidence shows that Veterans and Service members with PTSD have meaningful response to medications and psychotherapy but that military populations have poorer outcomes relative to non-military populations. The reasons for the difference are unclear, but do not seem due to specific types of treatment (because the effect occurs for both medication and psychotherapy) or population characteristics such as gender. Research is needed to disentangle the effects of military service and trauma type (combat and non-combat) and the effects of population characteristics as explanations—with the goal of identifying modifiable factors that can enhance outcomes. Research is also needed on medication because most research in this area has focused only on psychotherapy. The goal of enhancing treatment outcomes among individuals with PTSD is critically important in all populations.

Featured Articles

Bonfils, K. A., Tennity, C. L., Congedo, B. A., Dolowich, B. A., Hammer, L. A., & Haas, G. L. (2022). **Functional outcomes from psychotherapy for people with posttraumatic stress disorder: A meta-analysis.** *Journal of Anxiety Disorders, 89*, 102576. doi:10.1016/j.janxdis.2022.102576 People with PTSD experience a wide array of symptoms, often accompanied by significant functional and quality of life impairments. Evidence-based psychotherapies are effective for alleviating symptoms in this group, but functional outcomes following psychotherapy are understudied. This study aimed to synthesize existing work on functional outcomes of psychotherapy to conduct a meta-analytic investigation examining whether people with PTSD experience significant improvements in functioning and quality of life following a course of psychotherapy. A literature search was conducted for studies reporting results of randomized clinical trials of psychotherapies for people diagnosed with PTSD that included a functional or quality of life outcome measured at pre- and post-intervention. Both between-groups and within-groups analyses were conducted using a random effects model. Fifty-six independent samples were included. Results suggest that, on average, people with PTSD experience significant, moderate improvement in functional outcomes after a course of psychotherapy. Taken together, this meta-analysis represents a substantial advance in our understanding of functional outcomes of psychotherapy for people with PTSD. Findings suggest that psychotherapy is one

vehicle through which functional outcomes may be improved for this group, though notably to a lesser degree than symptom improvement.

Bradley, R., Greene, J., Russ, E., Dutra, L., & Westen, D. (2005). **A multidimensional meta-analysis of psychotherapy for PTSD.** *The American Journal of Psychiatry, 162*, 214–227. doi:10.1176/appi.ajp.162.2.214 *Objective:* The authors present a multidimensional meta-analysis of studies published between 1980 and 2003 on psychotherapy for PTSD. *Method:* Data on variables not previously meta-analyzed such as inclusion and exclusion criteria and rates, recovery and improvement rates, and follow-up data were examined. *Results:* Results suggest that psychotherapy for PTSD leads to a large initial improvement from baseline. More than half of patients who complete treatment with various forms of cognitive behavior therapy or EMDR improve. Reporting of metrics other than effect size provides a somewhat more nuanced account of outcome and generalizability. *Conclusions:* The majority of patients treated with psychotherapy for PTSD in randomized trials recover or improve, rendering these approaches some of the most effective psychosocial treatments devised to date. Several caveats, however, are important in applying these findings to patients treated in the community. Exclusion criteria and failure to address polysymptomatic presentations render generalizability to the population of PTSD patients indeterminate. The majority of patients posttreatment continue to have substantial residual symptoms, and follow-up data beyond very brief intervals have been largely absent. Future research intended to generalize to patients in practice should avoid exclusion criteria other than those a sensible clinician would impose in practice (e.g., schizophrenia), should avoid wait-list and other relatively inert control conditions, and should follow patients through at least 2 years.

Dillon, K. H., LoSavio, S. T., Henry, T. R., Murphy, R. A., & Resick, P. A. (2019). **The impact of military status on cognitive processing therapy outcomes in the community.** *Journal of Traumatic Stress, 32*, 330–336. doi:10.1002/jts.22396 Military-affiliated individuals (i.e., active duty personnel and Veterans) exhibit high rates of PTSD. Although existing evidence-based treatments (EBTs) for PTSD, such as CPT, have demonstrated effectiveness with military-affiliated patients, there is evidence to suggest these individuals do not benefit as much as civilians. However, few studies have directly compared the effects of PTSD treatment between civilian and military-affiliated participants. The current study compared treatment outcomes of military-affiliated and civilian patients receiving CPT. Participants with PTSD who were either civilians ($n = 136$) or military-affiliated ($n = 63$) received CPT from community-based providers in training for CPT. Results indicated that military-affiliated participants were equally likely to complete treatment, Log odds ratio (OR) = 0.14, $p = .648$. Although military-affiliated participants exhibited reductions in PTSD, $B = -2.53$, $p < .001$; and depression symptoms, $B = -0.65$, $p < .001$, they experienced smaller reductions in symptoms relative to civilians: $B = 1.15$, $p = .015$ for PTSD symptoms and $B = 0.29$, $p = .029$ for depression symptoms. Furthermore, variability estimates indicated there was more variability in providers' treatment of military-affiliated versus civilian participants (i.e., completion rates and symptom reduction). These findings suggest that military-affiliated patients can be successfully retained in trauma-focused treatment (TFT) in the community at the same rate as civilian patients, and they significantly improve PTSD and depression symptoms although not as much as civilians. These findings also highlight

community providers' variability in treatment of military-affiliated patients, providing support for more military-cultural training.

Friedman, M. J., Marmar, C. R., Baker, D. G., Sikes, C. R., & Farfel, G. M. (2007). **Randomized, double-blind comparison of sertraline and placebo for posttraumatic stress disorder in a Department of Veterans Affairs setting.** *The Journal of Clinical Psychiatry, 68*, 711–720. doi:10.4088/jcp.v68n0508 *Objective:* To evaluate the efficacy of sertraline in the treatment of PTSD in a VA clinic setting involving patients with predominantly combat-related PTSD. *Method:* 169 outpatient subjects with a diagnosis of PTSD from the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised (DSM-III-R)* and who scored 50 or higher on Part 2 of the Clinician-Administered PTSD Scale (CAPS-2) at the end of a 1-week placebo run-in period participated. Patients recruited from 10 VA medical centers were randomly assigned to 12 weeks of flexibly dosed sertraline (25-200 mg/day) ($N = 86$; 70% with combat-related PTSD; 79% male) or placebo ($N = 83$; 72% combat-related PTSD; 81% male) between May 1994 and September 1996. The primary efficacy measures were the mean change in CAPS-2 total severity score from baseline to endpoint, in the total score from the Impact of Event Scale, and in the Clinical Global Impressions-Severity of Illness and Improvement scales. *Results:* There were no significant differences between sertraline and placebo on any of the primary or secondary efficacy measures at endpoint. In order to understand the results, gender, duration of illness, severity of illness, type of trauma, and history of alcohol/substance abuse were explored as potential moderators of outcome, but no consistent effects were uncovered. Sertraline was well tolerated, with 13% of patients discontinuing due to adverse events. *Conclusion:* Sertraline was not demonstrated to be efficacious in the treatment of PTSD in the VA clinic settings studied.

Goodson, J., Helstrom, A., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J., & Powers, M. B. (2011). **Treatment of posttraumatic stress disorder in U.S. combat veterans: A meta-analytic review.** *Psychological Reports, 109*(2), 573–599. doi:10.2466/02.09.15.16.PR0.109.5.573-599 Among US Veterans who have been exposed to combat-related trauma, significantly elevated rates of PTSD are reported. Veterans with PTSD are treated for the disorder at VA hospitals through a variety of psychotherapeutic interventions. Given the significant impairment associated with PTSD, it is imperative to assess the typical treatment response associated with these interventions. 24 studies with a total sample size of 1,742 participants were quantitatively reviewed. Overall, analyses showed a medium between-groups effect size for active treatments compared to control conditions. Thus, the average VA-treated patient fared better than 66% of patients in control conditions. VA treatments incorporating exposure-based interventions showed the highest within-group effect size. Effect sizes were not moderated by treatment dose, sample size, or publication year. Findings are encouraging for treatment seekers for combat-related PTSD in VA settings.

Haagen, J. F.G., Smid, G. E., Knipscheer, J. W., & Kleber, R. J. (2015). **The efficacy of recommended treatments for veterans with PTSD: A metaregression analysis.** *Clinical Psychology Review, 40*, 184–194. <https://doi.org/10.1016/j.cpr.2015.06.008> Soldiers and Veterans diagnosed with PTSD benefit less from

psychotherapy than non-military populations. The current meta-analysis identified treatment predictors for traumatized soldiers and Veterans, using data from studies examining guideline-recommended interventions, namely: EMDR, exposure, cognitive, cognitive restructuring, cognitive processing, trauma-focused cognitive behavioral, and stress management therapies. A systematic search identified 57 eligible studies reporting on 69 treated samples. Exposure therapy and CPT were more effective than EMDR and stress management therapy. Group-only therapy formats performed worse compared with individual-only formats, or a combination of both formats. After controlling for study design variables, EMDR no longer negatively predicted treatment outcome. The number of trauma-focused sessions, unlike the total number of psychotherapy sessions, positively predicted treatment outcome. We found a relationship between PTSD pretreatment severity levels and treatment outcome, indicating lower treatment gains at low and high PTSD severity levels compared with moderate severity levels. Demographic variables did not influence treatment outcome. Consequently, soldiers and Veterans are best served using exposure interventions to target PTSD. Our results did not support a group-only therapy format. Recommended interventions appear less effective at relatively low and high patient PTSD severity levels. Future high-quality studies are needed to determine the efficacy of EMDR.

Hamblen, J. L., Grubbs, K. M., Cole, B., Schnurr, P. P., & Harik, J. M. (2022). **"Will it work for me?" Developing patient-friendly graphical displays of posttraumatic stress disorder treatment effectiveness.** *Journal of Traumatic Stress, 35*, 999–1010. doi:10.1002/jts.22808 The goal of this study was to create simple visual displays to help patients understand the benefits of evidence-based treatment for PTSD. We reviewed randomized trials of the most effective individual, trauma-focused psychotherapies and first-line antidepressants for adults with PTSD. The analytic sample included 65 treatment arms from 41 trials. We used binomial logistic regression to estimate the proportion of participants who lost their PTSD diagnosis at posttreatment and created a sample icon array to display these estimates. We provide a range of estimates (0-100) based on varying the percentage of the sample with a military affiliation. The percentage of participants who no longer met the diagnostic criteria for PTSD among civilian populations was 64.3% for trauma-focused treatment, 56.9% for selective serotonin reuptake inhibitors (SSRI)/serotonin and norepinephrine reuptake inhibitors (SNRI), and 16.7% for waitlist/minimal attention. For military populations, the proportions of participants who no longer met the diagnostic criteria were 44.2%, 36.7%, and 8.1%, respectively. We present icon arrays for 0%, 7%, 50%, and 100% military affiliation displaying 100 icons, a portion of which were shaded to indicate the number of participants that no longer met the PTSD criteria following treatment. After evidence-based treatment, between one third and two thirds of participants no longer met the PTSD criteria. Providers can use the icon array developed in this study with patients to facilitate communication regarding PTSD treatment effectiveness.

Jacoby, V. M., Straud, C. L., Bagley, J. M., Tyler, H., Baker, S. N., Denejkina, A., Sippel, L. M., Kaya, R., Rozek, D. C., Fina, B. A., Dondanville, K. A., & STRONG STAR Training Initiative (2022). **Evidence-based posttraumatic stress disorder treatment in a community sample: Military-affiliated versus civilian**

patient outcomes. *Journal of Traumatic Stress*, 35, 1072–1086. doi:10.1002/jts.22812 PTSD is a significant mental health issue among military Service members and Veterans. Although the VA provides crucial resources for behavioral health care, many Veterans seek mental health services through community clinics. Previous research illustrates that military and Veteran patients benefit less from EBTs for PTSD than civilians. However, most PTSD treatment outcome research on military and Veteran populations is conducted in VA or military settings. Little is known about outcomes among military-affiliated patients in community settings. The primary aim of this study was to directly compare civilian versus military-affiliated patient outcomes on PTSD and depression symptoms using the PTSD Checklist for *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)* (PCL-5) and the nine-item Patient Health Questionnaire (PHQ-9) in a community setting. Participants ($N = 502$) included military-affiliated (Veteran, Guard/Reservist, active duty) and civilian patients who engaged in CPT or PE for PTSD in community clinics. Both groups demonstrated significant reductions on the PCL-5, military-affiliated: $d = -0.91$, civilian: $d = -1.18$; and PHQ-9, military-affiliated: $d = -0.65$, civilian: $d = -0.88$, following treatment. However, military-affiliated patients demonstrated smaller posttreatment reductions on the PCL-5, $Mdiff = 5.75$, $p = .003$, and PHQ-9, $Mdiff = 1.71$, $p = .011$, compared to civilians. Results demonstrate that military-affiliated patients benefit from EBTs for PTSD, albeit to a lesser degree than civilians, even in community settings. These findings also highlight the importance of future research on improving EBTs for military personnel with PTSD.

Jericho, B., Luo, A., & Berle, D. (2022). **Trauma-focused psychotherapies for post-traumatic stress disorder: A systematic review and network meta-analysis.** *Acta Psychiatrica Scandinavica*, 145, 132–155. doi:10.1111/acps.13366 *Introduction:* Meta-analytic reviews suggest similar outcomes across trauma-focused psychotherapies for adults with PTSD. However, this conclusion may be premature due to suboptimal statistical-review methodologies. Network meta-analysis (NMA) allows a detailed rank-ordering of the efficacy of established psychotherapy interventions derived from indirect evidence as well as results from direct head-to-head comparisons. *Objective:* We sought to determine the efficacy and attrition rates of psychotherapy interventions for PTSD by applying NMA. *Methods:* We searched EMBASE, PsychINFO, PTSDpubs and PubMed for RCTs that compared psychotherapies either head-to-head or against controls for adults with PTSD. A frequentist NMA was used to compare direct and indirect effects to determine the efficacy and attrition rates of psychotherapy interventions. *Results:* Of the 5,649 papers identified, 82 trials comprising of 5,838 patients were included. The network comprised 17 psychotherapies and four control conditions. Network estimates indicated superior efficacy of meta-cognitive therapy and CPT over other psychotherapies (ESs between = 0.26 and 2.32). Written exposure therapy and narrative exposure therapy were associated with lower risk of dropout when considered alongside other psychotherapies. Confidence in the network meta-analytic estimates was considered moderate for both outcomes. *Conclusions:* In broad terms, therapeutic commensurability was evident. Nevertheless, with additional studies and larger sample sizes, meta-cognitive and written exposure therapies could indeed differentiate themselves from other approaches as having favorable

efficacy and acceptability respectively. These findings may inform clinical decision-making, as well as guide future research for PTSD.

Kitchiner, N. J., Lewis, C., Roberts, N. P., & Bisson, J. I. (2019). **Active duty and ex-serving military personnel with post-traumatic stress disorder treated with psychological therapies: Systematic review and meta-analysis.** *European Journal of Psychotraumatology*, 10(1), 1684226. doi:10.1080/20008198.2019.1684226 *Background:* PTSD is a major cause of morbidity amongst active duty and ex-serving military personnel. In recent years increasing efforts have been made to develop more effective treatments. *Objective:* To determine which psychological therapies are efficacious in treating active duty and ex-serving military personnel with PTSD. *Method:* A systematic review was undertaken according to Cochrane Collaboration Guidelines. The primary outcome measure was reduction in PTSD symptoms and the secondary outcome dropout. *Results:* Twenty-four studies with 2,386 participants were included. Evidence demonstrated that cognitive behavioral therapy (CBT) with a trauma focus (CBT-TF) was associated with the largest evidence of effect when compared to waitlist/usual care in reducing PTSD symptoms posttreatment (10 studies; $n = 524$; SMD -1.22 , -1.78 to -0.66). Group CBT-TF was less effective when compared to individual CBT-TF at reducing PTSD symptoms post-treatment (1 study; $n = 268$; SMD -0.35 , -0.11 to -0.59). EMDR therapy was not effective when compared to waitlist/usual care at reducing PTSD symptoms posttreatment (4 studies; $n = 92$; SMD -0.83 , -1.75 to 0.10). There was evidence of greater dropout from CBT-TF therapies compared to waitlist and Present Centered Therapy. *Conclusions:* The evidence, albeit limited, supports individual CBT-TF as the first-line psychological treatment of PTSD in active duty and ex-serving personnel. There is evidence for Group CBT-TF, but this is not as strong as for individual CBT-TF. EMDR cannot be recommended as a first-line therapy at present and urgently requires further evaluation. Lower effect sizes than for other populations with PTSD and high levels of dropout suggest that CBT-TF in its current formats is not optimally acceptable and further research is required to develop and evaluate more effective treatments for PTSD and complex PTSD in active duty and ex-serving military personnel.

Kline, A. C., Cooper, A. A., Rytwinski, N. K., & Feeny, N. C. (2018). **Long-term efficacy of psychotherapy for posttraumatic stress disorder: A meta-analysis of randomized controlled trials.** *Clinical Psychology Review*, 59, 30–40. doi:10.1016/j.cpr.2017.10.009 Psychotherapies are well established as efficacious acute interventions for PTSD. However, the long-term efficacy of such interventions and the maintenance of gains following termination is less understood. This meta-analysis evaluated enduring effects of psychotherapy for PTSD in RCTs with long-term follow-ups (LTFUs) of at least six months duration. Analyses included 32 PTSD trials involving 72 treatment conditions ($N = 2935$). Effect sizes were significantly larger for active psychotherapy conditions relative to control conditions for the period from pretreatment to LTFU, but not posttreatment to LTFU. All active interventions demonstrated long-term efficacy. Pretreatment to LTFU effect sizes did not significantly differ among treatment types. Exposure-based treatments demonstrated stronger effects in the posttreatment to LTFU period ($d = 0.27$) compared to other interventions

($p = 0.005$). Among active conditions, LTFU effect sizes were not significantly linked to trauma type, population type, or intended duration of treatment, but were strongly tied to acute dropout as well as whether studies included all randomized patients in follow-up analyses. Findings provide encouraging implications regarding the long-term efficacy of interventions and the durability of symptom reduction but must be interpreted in parallel with methodological considerations and study characteristics of RCTs.

McLean, C. P., Levy, H. C., Miller, M. L., & Tolin, D. F. (2022a). **Exposure therapy for PTSD in military populations: A systematic review and meta-analysis of randomized clinical trials.** *Journal of Anxiety Disorders, 90*, 102607. doi:10.1016/j.janxdis.2022.102607

Military populations are disproportionately affected by PTSD and may experience less benefit from first-line psychotherapies for PTSD relative to civilians. We examined the efficacy of exposure therapy among Veterans and active-duty military personnel across various control conditions and tested potential treatment-related, demographic, and clinical moderators. RCTs of exposure-based therapies for PTSD in military populations were identified from a recent meta-analysis and through PsycINFO and Medline. Nineteen studies met inclusion criteria and were included in the meta-analysis (total $N = 2905$). Exposure therapy had medium to large effects compared to waitlist and treatment as usual, a small effect compared to non-trauma-focused therapy, and no effect relative to other trauma-focused therapy. The overall effect was similar at posttreatment and follow-up. The effect size for exposure was larger in studies with younger participants, more women, fewer participants with comorbid major depression, and fewer participants taking psychiatric medication. Effect sizes were not impacted by treatment length or type, participant race or ethnicity, comorbid substance use, Veteran versus active-duty status, or study risk of bias. Findings document the variable efficacy of exposure therapy in military populations across comparator types and point to several potentially important moderators of outcome that should be examined in future research.

McLean, C. P., Levy, H. C., Miller, M. L., & Tolin, D. F. (2022b). **Exposure therapy for PTSD: A meta-analysis.** *Clinical Psychology Review, 91*, 102115. doi:10.1016/j.cpr.2021.102115

PTSD is associated with high morbidity and functional impairment in the absence of effective treatment. Exposure therapy for PTSD is a TFT that typically includes in vivo and/or imaginal exposure. The goal of this meta-analysis was to examine the overall efficacy of exposure therapy for PTSD compared to various control conditions. We also assessed the efficacy of individual exposure-based treatments and the potentially moderating impact of various demographic, clinical, and treatment-related factors. PsycINFO and Medline were searched for RCTs of exposure-based therapies for adult PTSD. A total of 934 abstracts were screened for initial eligibility; of these, 65 articles met inclusion criteria and were included in the meta-analysis (total $N = 4929$ patients). Exposure therapy showed large effects relative to waitlist and treatment-as-usual, a small effect relative to non-trauma-focused comparators and a negligible effect relative to other trauma-focused treatments or medication. At follow-up, most effect sizes were stable, except for a medium effect favoring exposure over medication. The individual exposure-based therapies examined were similarly effective. Moderator analyses revealed larger effect sizes in studies with fewer sessions, younger samples, fewer participants

diagnosed with substance use disorder, and fewer participants on psychiatric medication. Effect sizes were also larger in studies of refugees and civilians compared to military samples, studies of PTSD related to natural disasters and transportation accidents vs. other traumatic events, and studies of individual vs. group therapy. Findings support the overall efficacy of exposure therapy and highlight that there are several efficacious exposure-based therapies available.

Steenkamp, M. M., Litz, B. T., Hoge, C. W., & Marmar, C. R. (2015). **Psychotherapy for military-related PTSD: A review of randomized clinical trials.** *JAMA, 314*, 489–500. doi:10.1001/jama.2015.8370

Importance: PTSD is a disabling psychiatric disorder common among military personnel and Veterans. First-line psychotherapies most often recommended for PTSD consist mainly of “trauma-focused” psychotherapies that involve focusing on details of the trauma or associated cognitive and emotional effects. *Objective:* To examine the effectiveness of psychotherapies for PTSD in military and Veteran populations. Evidence Review: PubMed, PsycINFO, and PILOTS were searched for randomized clinical trials (RCTs) of individual and group psychotherapies for PTSD in military personnel and Veterans, published from January 1980 to March 1, 2015. We also searched reference lists of articles, selected reviews, and meta-analyses. Of 891 publications initially identified, 36 were included. *Findings:* Two trauma-focused therapies, CPT and PE, have been the most frequently studied psychotherapies for military-related PTSD. Five RCTs of CPT (that included 481 patients) and 4 RCTs of PE (that included 402 patients) met inclusion criteria. Focusing on intent-to-treat outcomes, within-group posttreatment effect sizes for CPT and PE were large (Cohen d range, 0.78–1.10). CPT and PE also outperformed waitlist and treatment-as-usual control conditions. Forty-nine percent to 70% of participants receiving CPT and PE attained clinically meaningful symptom improvement (defined as a 10- to 12-point decrease in interviewer-assessed or self-reported symptoms). However, mean posttreatment scores for CPT and PE remained at or above clinical criteria for PTSD, and approximately two-thirds of patients receiving CPT or PE retained their PTSD diagnosis after treatment (range, 60%–72%). CPT and PE were marginally superior compared with non-trauma-focused psychotherapy comparison conditions. *Conclusions and Relevance:* In military and Veteran populations, trials of the first-line trauma-focused interventions CPT and PE have shown clinically meaningful improvements for many patients with PTSD. However, nonresponse rates have been high, many patients continue to have symptoms, and trauma-focused interventions show marginally superior results compared with active control conditions. There is a need for improvement in existing PTSD treatments and for development and testing of novel evidence-based treatments, both trauma-focused and non-trauma-focused.

Steenkamp, M. M., Litz, B. T., & Marmar, C. R. (2020). **First-line psychotherapies for military-related PTSD.** *JAMA, 323*, 656–657. doi:10.1001/jama.2019.20825

Two well-established first-line cognitive-behavioral psychotherapies for posttraumatic stress disorder (PTSD), PE and CPT, are used in the VA and US Department of Defense (DoD) based chiefly on good outcomes in RCTs with civilians. PE and CPT are manualized (i.e., protocolized in a session-by-session manner) trauma-focused therapies that are based on processing the emotional and cognitive aspects of the

traumatic event. Consequently, these treatments are emotionally demanding for patients because PTSD is characterized by a strong motivation to avoid talking about the trauma and rekindling negative emotions associated with it. The prominence of PE and CPT in treating individuals with military-related PTSD has been increasingly challenged in recent years because RCTs of Veterans and military personnel have yielded mixed results, with patients often not obtaining clinically meaningful symptom improvement. These findings have led to questions about the extent to which these therapies should be prioritized and how military-related PTSD is best conceptualized, namely as a disorder that can be reliably managed by brief (approximately 12 session) monotherapies or as a highly complex and multiform condition requiring more individualized and comprehensive intervention.

Stewart, C. L., & Wrobel, T. A. (2009). **Evaluation of the efficacy of pharmacotherapy and psychotherapy in treatment of combat-related posttraumatic stress disorder: A meta-analytic review of outcome studies.** *Military Medicine*, 174, 460–469. doi:10.7205/milmed-d-04-1507 A meta-analysis was conducted to examine the relative effectiveness of the broad-based treatments for combat-related PTSD. The analysis includes 13 pharmacotherapy studies and 12 psychotherapy studies obtained from a PsycINFO database search and a reference search. Studies of pharmacotherapy treatment efficacy demonstrated a significantly greater decrease in reducing PTSD symptoms, $t(22) = -2.74$, $p = 0.01$, $d = 0.05$. A random coefficient analysis supports this finding with significance determined at $p < 0.001$ for the fixed effects in the models. A limited examination of depression as a frequently comorbid disorder indicated pharmacotherapy also demonstrated a significantly greater decrease than psychotherapy in depression symptoms, $t(15.77) = -2.26$, $p = 0.04$, $d = 0.16$. Differences between treatments are discussed as potentially reflective of assignment to treatments and assessment techniques as well as therapeutic effects.

Straud, C. L., Siev, J., Messer, S., & Zalta, A. K. (2019). **Examining military population and trauma type as moderators of treatment outcome for first-line psychotherapies for PTSD: A meta-analysis.** *Journal of Anxiety Disorders*, 67, 102133. doi:10.1016/j.janxdis.2019.102133 There is conflicting evidence as to whether military populations (i.e., Veteran and active-duty military Service members) demonstrate a poorer response to psychotherapy for PTSD compared to civilians. Existing research may be complicated by the fact that treatment outcomes differences could be due to the type of trauma exposure (e.g., combat) or population differences (e.g., military culture). This meta-analysis evaluated PTSD treatment outcomes as a function of trauma type (combat v. assault v. mixed) and population (military v. civilian). Unlike previous meta-analyses, we focused exclusively on manualized, first-line psychotherapies for PTSD as defined by expert treatment guidelines. Treatment outcomes were large across trauma types and population; yet differences were observed between trauma and population subgroups. Military populations demonstrated poorer treatment outcomes compared to civilians. The combat and assault trauma subgroups had worse treatment outcomes compared to the mixed trauma subgroup, but differences were not observed between assault and combat subgroups. Higher attrition rates predicted poorer treatment outcomes but did not vary

between military populations and civilians. Overall, manualized, first-line psychotherapies for PTSD should continue to be used for civilians and military populations with various trauma types. However, greater emphasis should be placed on enhancing PTSD psychotherapies for military populations and on treatment retention across populations based on findings from this meta-analysis.

Watts, B. V., Schnurr, P. P., Mayo, L., Young-Xu, Y., Weeks, W. B., & Friedman, M. J. (2013). **Meta-analysis of the efficacy of treatments for posttraumatic stress disorder.** *The Journal of Clinical Psychiatry*, 74, e541–e550. doi:10.4088/JCP.12r08225 **Objective:** PTSD is an important mental health issue in terms of the number of people affected and the morbidity and functional impairment associated with the disorder. The purpose of this study was to examine the efficacy of all treatments for PTSD. **Data Sources:** PubMed, MEDLINE, PILOTS, and PsycINFO databases were searched for randomized controlled clinical trials of any treatment for PTSD in adults published between January 1, 1980, and April 1, 2012, and written in the English language. The following search terms were used: post-traumatic stress disorders, posttraumatic stress disorder, PTSD, combat disorders, and stress disorders, post-traumatic. **Study Selection:** Articles selected were those in which all subjects were adults with a diagnosis of PTSD based on DSM criteria and a valid PTSD symptom measure was reported. Other study characteristics were systematically collected. The sample consisted of 137 treatment comparisons drawn from 112 studies. **Results:** Effective psychotherapies included cognitive therapy, exposure therapy, and EMDR ($g = 1.63, 1.08, \text{ and } 1.01$, respectively). Effective pharmacotherapies included paroxetine, sertraline, fluoxetine, risperidone, topiramate, and venlafaxine ($g = 0.74, 0.41, 0.43, 0.41, 1.20, \text{ and } 0.48$, respectively). For both psychotherapy and medication, studies with more women had larger effects and studies with more Veterans had smaller effects. Psychotherapy studies with wait-list controls had larger effects than studies with active control comparisons. **Conclusions:** Our findings suggest that patients and providers have a variety of options for choosing an effective treatment for PTSD. Substantial differences in study design and study participant characteristics make identification of a single best treatment difficult. Not all medications or psychotherapies are effective.

Weber, M., Schumacher, S., Hannig, W., Barth, J., Lotzin, A., Schäfer, I., Ehring, T., & Kleim, B. (2021). **Long-term outcomes of psychological treatment for posttraumatic stress disorder: A systematic review and meta-analysis.** *Psychological Medicine*, 51, 1420–1430. doi:10.1017/S003329172100163X Several types of psychological treatment for PTSD are considered well established and effective, but evidence of their long-term efficacy is limited. This systematic review and meta-analysis aimed to investigate the long-term outcomes across psychological treatments for PTSD. MEDLINE, Cochrane Library, PTSDpubs, PsycINFO, PSYINDEX, and related articles were searched for RCTs with at least 12 months of follow-up. Twenty-two studies ($N = 2638$) met inclusion criteria, and 43 comparisons of CBT were available at follow-up. Active treatments for PTSD yielded large effect sizes from pretest to follow-up and a small-controlled effect size compared with non-directive control groups at follow-up. TFT and non-TFT showed large improvements

from pretest to follow-up, and effect sizes did not significantly differ from each other. Active treatments for comorbid depressive symptoms revealed small to medium effect sizes at follow-up, and improved PTSD and depressive symptoms remained stable from treatment end to follow-up. Military personnel, low proportion of female patients, and self-rated PTSD measures were associated with decreased effect sizes for PTSD at follow-up. The findings suggest that CBT for PTSD is efficacious in the long term. Future studies are needed to determine the lasting efficacy of other psychological treatments and to confirm benefits beyond 12-month follow-up.

References (* indicate 19 featured in article)

- *Bonfils, K. A., Tennity, C. L., Congedo, B. A., Dolowich, B. A., Hammer, L. A., & Haas, G. L. (2022). **Functional outcomes from psychotherapy for people with posttraumatic stress disorder: A meta-analysis.** *Journal of Anxiety Disorders*, *89*, 102576. doi:10.1016/j.janxdis.2022.102576
- *Bradley, R., Greene, J., Russ, E., Dutra, L., & Westen, D. (2005). **A multidimensional meta-analysis of psychotherapy for PTSD.** *The American Journal of Psychiatry*, *162*, 214–227. doi:10.1176/appi.ajp.162.2.214
- *Dillon, K. H., LoSavio, S. T., Henry, T. R., Murphy, R. A., & Resick, P. A. (2019). **The impact of military status on cognitive processing therapy outcomes in the community.** *Journal of Traumatic Stress*, *32*, 330–336. doi:10.1002/jts.22396
- Dondanville, K. A., Fina, B. A., Straud, C. L., Finley, E. P., Tyler, H., Jacoby, V. M., Blount, T. H., Moring, J. C., Pruiksma, K. E., Blankenship, A. E., Evans, W. R., & Zaturenskaya, M., for the STRONG STAR Training Initiative. (2020). **Launching a competency-based training program in evidence-based treatments for PTSD: Supporting veteran-serving mental health providers in Texas.** *Community Mental Health Journal*, *57*, 910–919. doi:10.1007/s10597-020-00676-7.
- *Friedman, M. J., Marmar, C. R., Baker, D. G., Sikes, C. R., & Farfel, G. M. (2007). **Randomized, double-blind comparison of sertraline and placebo for posttraumatic stress disorder in a Department of Veterans Affairs setting.** *The Journal of Clinical Psychiatry*, *68*, 711–720. doi:10.4088/jcp.v68n0508
- *Goodson, J., Helstrom, A., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J., & Powers, M. B. (2011). **Treatment of posttraumatic stress disorder in U.S. combat veterans: A meta-analytic review.** *Psychological Reports*, *109*, 573–599. doi:10.2466/02.09.15.16.PR0.109.5.573-599
- *Haagen, J. F.G., Smid, G. E., Knipscheer, J. W., & Kleber, R. J. (2015). **The efficacy of recommended treatments for veterans with PTSD: A metaregression analysis.** *Clinical Psychology Review*, *40*, 184–194. https://doi.org/10.1016/j.cpr.2015.06.008
- Hamblen, J. L., Norman, S. B., Sonis, J. H., Phelps, A. J., Bisson, J. I., Nunes, V. D., Megnin-Viggars, O., Forbes, D., Riggs, D. S., & Schnurr, P. P. (2019). **A guide to guidelines for the treatment of posttraumatic stress disorder in adults: An update.** *Psychotherapy*, *56*, 359–373. doi:10.1037/pst0000231
- *Hamblen, J. L., Grubbs, K. M., Cole, B., Schnurr, P. P., & Harik, J. M. (2022). **"Will it work for me?" Developing patient-friendly graphical displays of posttraumatic stress disorder treatment effectiveness.** *Journal of Traumatic Stress*, *35*, 999–1010. doi:10.1002/jts.22808
- Henney, J. E. (2000). **Sertraline approved for posttraumatic stress disorder.** *JAMA*, *283*, 596. doi:10.1001/jama.283.5.596-JFD00000-3-1
- *Jacoby, V. M., Straud, C. L., Bagley, J. M., Tyler, H., Baker, S. N., Denejkina, A., Sippel, L. M., Kaya, R., Rozek, D. C., Fina, B. A., Dondanville, K. A., & STRONG STAR Training Initiative (2022). **Evidence-based posttraumatic stress disorder treatment in a community sample: Military-affiliated versus civilian patient outcomes.** *Journal of Traumatic Stress*, *35*, 1072–1086. doi:10.1002/jts.22812
- *Jericho, B., Luo, A., & Berle, D. (2022). **Trauma-focused psychotherapies for post-traumatic stress disorder: A systematic review and network meta-analysis.** *Acta Psychiatrica Scandinavica*, *145*, 132–155. doi:10.1111/acps.13366
- *Kitchiner, N. J., Lewis, C., Roberts, N. P., & Bisson, J. I. (2019). **Active duty and ex-serving military personnel with post-traumatic stress disorder treated with psychological therapies: Systematic review and meta-analysis.** *European Journal of Psychotraumatology*, *10*(1), 1684226. doi:10.1080/20008198.2019.1684226
- *Kline, A. C., Cooper, A. A., Rytwinski, N. K., & Feeny, N. C. (2018). **Long-term efficacy of psychotherapy for posttraumatic stress disorder: A meta-analysis of randomized controlled trials.** *Clinical Psychology Review*, *59*, 30–40. doi:10.1016/j.cpr.2017.10.009
- *McLean, C. P., Levy, H. C., Miller, M. L., & Tolin, D. F. (2022a). **Exposure therapy for PTSD in military populations: A systematic review and meta-analysis of randomized clinical trials.** *Journal of Anxiety Disorders*, *90*, 102607. doi:10.1016/j.janxdis.2022.102607
- *McLean, C. P., Levy, H. C., Miller, M. L., & Tolin, D. F. (2022b). **Exposure therapy for PTSD: A meta-analysis.** *Clinical Psychology Review*, *91*, 102115. doi:10.1016/j.cpr.2021.102115
- National Institute for Health and Care Excellence (2018). **Post-traumatic stress disorder.** https://www.nice.org.uk/guidance/ng116. Accessed December 28, 2022.
- *Steenkamp, M. M., Litz, B. T., Hoge, C. W., & Marmar, C. R. (2015). **Psychotherapy for military-related PTSD: A review of randomized clinical trials.** *JAMA*, *314*, 489–500. doi:10.1001/jama.2015.8370
- *Steenkamp, M. M., Litz, B. T., & Marmar, C. R. (2020). **First-line psychotherapies for military-related PTSD.** *JAMA*, *323*, 656–657. doi:10.1001/jama.2019.20825

REFERENCES *continued*

*Stewart, C. L., & Wrobel, T. A. (2009). **Evaluation of the efficacy of pharmacotherapy and psychotherapy in treatment of combat-related posttraumatic stress disorder: A meta-analytic review of outcome studies.** *Military Medicine*, 174, 460–469. doi:10.7205/milmed-d-04-1507

*Straud, C. L., Siev, J., Messer, S., & Zalta, A. K. (2019). **Examining military population and trauma type as moderators of treatment outcome for first-line psychotherapies for PTSD: A meta-analysis.** *Journal of Anxiety Disorders*, 67, 102133. doi:10.1016/j.janxdis.2019.102133

Wade, D., Varker, T., Kartal, D., Hetrick, S., O'Donnell, M., & Forbes, D. (2016). **Gender difference in outcomes following trauma-focused interventions for posttraumatic stress disorder: Systematic review and meta-analysis.** *Psychological Trauma: Theory, Research, Practice and Policy*, 8, 356–364. doi:10.1037/tra0000110

*Watts, B. V., Schnurr, P. P., Mayo, L., Young-Xu, Y., Weeks, W. B., & Friedman, M. J. (2013). **Meta-analysis of the efficacy of treatments for posttraumatic stress disorder.** *The Journal of Clinical Psychiatry*, 74, e541–e550. doi:10.4088/JCP.12r08225

*Weber, M., Schumacher, S., Hannig, W., Barth, J., Lotzin, A., Schäfer, I., Ehring, T., & Kleim, B. (2021). **Long-term outcomes of psychological treatment for posttraumatic stress disorder: A systematic review and meta-analysis.** *Psychological Medicine*, 51, 1420–1430. doi:10.1017/S003329172100163X