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The *Combat & Operational Stress Research Quarterly* is a compilation of recent research on combat and operational stress, including relevant findings on the etiology, course and treatment of Posttraumatic Stress Disorder (PTSD). The intent of this publication is to facilitate translational research by providing busy clinicians with up-to-date findings, with the potential to guide and inform evidence-based treatment.

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COMBAT & OPERATIONAL STRESS RESEARCH QUARTERLY

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Vicarious posttraumatic growth among therapists

Key Findings: Analysis of therapists who work with trauma patients revealed that cumulative vicarious exposure to trauma positively predicted posttraumatic growth. Empathy was also found to be a positive predictor of posttraumatic growth and moderated the relationship between vicarious exposure to trauma and posttraumatic growth. However, therapists who reported having a strong sense of coherence (seeing the world as comprehensible, manageable and meaningful) were likely to experience lower levels of vicarious posttraumatic growth.

Study type: Cross-sectional study with self-report assessments

Sample: 118 U.K. therapists who had worked with trauma patients

Implications: Although empathy has previously been associated with vicarious trauma among therapists, this study shows that empathy can also lead to posttraumatic growth, particularly in relating to others. The unexpected finding of a strong sense of coherence negatively predicting posttraumatic growth could be due to measuring a sample of highly coherent therapists who may not demonstrate as much posttraumatic growth after being exposed to vicarious trauma compared to those with low coherence. Further study on posttraumatic growth and vicarious trauma is needed to inform the selection, training and supervision of therapists.

Brockhouse, R., Msetfi, R.M., Cohen, K. & Joseph, S. (2011). Vicarious exposure to trauma and growth in therapists: the moderating effects of sense of coherence, organizational support, and empathy. *Journal of Traumatic Stress, 24*(6), 735-42.

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Group-based exposure therapy effective in reducing PTSD symptoms among combat veterans

Key Findings: Chronic PTSD patients who participated in 16 weeks of group-based exposure therapy reported a significant reduction in depression and PTSD symptoms with large effect sizes that persisted at the 7-11 month follow-up assessment. A possible dose effect was also seen in that those who listened more times to a recording of their war-related trauma had greater reductions in PTSD symptoms.

Study type: Treatment outcome study with self-report assessments

Sample: 30 combat (primarily Vietnam) veterans with chronic PTSD

Implications: Group-based exposure therapy may be effective in reducing PTSD and depression symptoms among combat veterans with chronic PTSD, and given the high compliance rates in this study, may be a good treatment option for this population.

Ready, D.J., Sylvers, P., Worley, V., Butt, J., Mascaro, N. & Bradley B. (2012). The impact of group-based exposure therapy on the PTSD and depression of 30 combat veterans. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(1), 84-93.

Grief negatively impacts physical health among soldiers post-deployment

Key Findings: At six months post-deployment, more than one-fifth of infantry soldiers reported problems coping with grief over the death of someone close. After controlling for potential confounders such as PTSD and depression, difficulty coping with grief was a significant contributor to physical health symptoms, poor general health, medical utilization and occupational impairment.

Study type: Cross-sectional study with self-report assessments

Sample: 1,522 infantry soldiers who were deployed to either Iraq or Afghanistan

Implications: Maladaptive coping with grief following deployment may hinder readiness and result in poor health consequences. Clinicians should be aware of the grief and coping mechanisms of patients who lost comrades during combat deployments.

Toblin, R.L., Riviere, L.A., Thomas, J.L., Adler, A.B., Kok, B.C. & Hoge, C.W. (2012). Grief and physical health outcomes in U.S. soldiers returning from combat. *Journal of Affective Disorders*, 136(3), 469-75.

Psychological skills training does not decrease stress response among military survival school students

Key Findings: Students in a military survival school reported greatly increased psychological distress immediately after a mock-captivity event, which then drastically dropped over the next 24 hours. However, students who received a brief psychological skills training intervention (teaching skills to cope with stress) prior to the captivity did not differ in their stress response from a group that did not receive the psychological skills training.

Study type: Randomized controlled field study with self-report assessments

Sample: 65 male military survival school students

Implications: Although this study confirmed past findings that military survival school activities can be extremely stressful, psychological skills training before a stressful event was not effective in lowering stress responses after the event. One explanation for this finding is that the psychological skills used during the event were reported to be very similar between the group that received the training and the group that did not, possibly because survival schools students are generally highly functioning and may have picked up these skills on their own. Future research should investigate alternative psychological skills trainings and the effect of psychological skills training in more mainstream military populations or during basic training, where the participants may find it more beneficial.

Taylor, M.K., Stanfill, K.E., Padilla, G.A., Markham, A.E., Ward, M.D., Koehler, M.M., et al. (2011). Effect of psychological skills training during military survival school: a randomized, controlled field study. *Military Medicine*, 176(12), 1362-8.

Psychological and psychosocial impact of deployment on military healthcare professionals

Key Findings: Clinically significant psychological distress was reported post-deployment by service members who operated in the healthcare field during deployment. Specifically, healthcare providers (officers) reported greater symptoms of PTSD, depression and anxiety, along with greater stress and impaired functioning compared to officers not working in healthcare. A greater number of enlisted healthcare specialists reported psychological problems compared

to providers, but the prevalence was generally similar to or slightly lower than their contemporaries outside the healthcare field.

Study type: Cross-sectional survey study

Sample: 6,116 active-duty personnel previously deployed to OEF/OIF

Implications: Healthcare providers and healthcare specialists in the military experience stressors during and after deployment that are unique to their specialty and may result in increased rates of psychopathology. Further evaluation of their operational experiences is warranted in order to better understand their specific needs and to identify preventative measures to foster psychological resilience during and after deployment.

Hickling, E.J., Gibbons, S., Barnett, S.D. & Watts, D. (2011). The psychological impact of deployment on OEF/OIF healthcare providers. *Journal of Traumatic Stress, 24*(6), 726-34.

Post-deployment support critical in reducing PTSD development

Key Findings: High levels of pre-deployment preparedness, unit support and post-deployment support were each independently associated with lower odds of PTSD development among National Guard soldiers. When various combinations of these deployment characteristics were evaluated, perceived post-deployment support appeared to be the strongest factor in preventing PTSD.

Study type: Cross-sectional study with self-report assessments conducted via telephone interview

Sample: 2,616 Ohio Army National Guard soldiers

Implications: Factors involving support and preparedness throughout the deployment cycle appear to influence the development of PTSD. In particular, post-deployment support may play a crucial role in reducing PTSD prevalence after deployment, and further efforts to develop post-deployment support interventions, especially among National Guard soldiers, are greatly needed.

Goldmann, E., Calabrese, J.R., Prescott, M.R., Tamburrino, M., Liberzon, I., Slembariski, R., et al. (2012). Potentially modifiable pre-, peri-, and postdeployment characteristics associated with deployment-related posttraumatic stress disorder among Ohio Army National Guard soldiers. *Annals of Epidemiology, 22*(2), 71-8.

Mindfulness-based stress reduction course reduces PTSD and depression symptoms among veterans

Key Findings: Veterans who participated in an 8-week mindfulness-based stress reduction (MBSR) course reported significantly improved PTSD and depression symptoms, functionality, behavioral activation, experiential avoidance and mindfulness four months after completing the course.

Study type: Treatment outcome study with self-report measures

Sample: 92 veterans enrolled in a VA mindfulness-based stress reduction course

Implications: MBSR may be an efficacious intervention for veterans and active-duty service members who experience PTSD, depression and other psychological difficulties. Further evaluation of MBSR through randomized controlled trials is warranted.

Kearney, D.J., McDermott, K., Malte, C., Martinez, M. & Simpson, T.L. (2012). Association of participation in a mindfulness program with measures of PTSD, depression and quality of life in a veteran sample. *Journal of Clinical Psychology, 68*(1), 101-16.

REVIEWS TO PERUSE

Ben-Zeev, D., Corrigan, P.W., Britt, T.W. & Langford, L. (in press). **Stigma of mental illness and service use in the military.** *Journal of Mental Health.*

Gibbons, S.W., Hickling, E.J. & Watts, D.D. (2012). **Combat stressors and post-traumatic stress in deployed military healthcare professionals: an integrative review.** *Journal of Advanced Nursing, 68*(1), 3-21.

Steckler, T. & Risbrough, V. (2012). **Pharmacological treatment of PTSD - established and new approaches.** *Neuropharmacology, 62*(2), 617-27.

Bonanno, G.A. & Mancini, A. (2012). **Beyond resilience and PTSD: mapping the heterogeneity of responses to potential trauma.** *Psychological Trauma: Theory, Research, Practice, and Policy, 4*(1), 74-83.



Norepinephrine uptake inhibitors may be an effective treatment for PTSD and alcohol dependence

Key Findings: The norepinephrine uptake inhibitor desipramine had a comparable efficacy on PTSD symptoms as the serotonin uptake inhibitor paroxetine among veterans with alcohol dependence and PTSD. However, desipramine did show clinical advantages compared to paroxetine with respect to study retention and alcohol use outcomes. Although naltrexone, the only FDA-approved pharmacotherapy for alcoholism, reduced alcohol craving relative to a placebo, it did not reduce alcohol use in this population.

Study type: Double-blind randomized controlled trial with clinical interviews and self-report assessments

Sample: 88 veterans with alcohol dependence and PTSD

Implications: Norepinephrine uptake inhibitors may be an effective treatment option for patients with alcohol dependence and PTSD. Desipramine appeared to be more effective for this comorbid condition than a combination of FDA-approved medications for PTSD (paroxetine) and alcohol dependence (naltrexone).

Petrakis, I.L., Ralevski, E., Desai, N., Trevisan, L., Gueorguieva, R., Rounsaville, B., et al. (2012). Noradrenergic vs Serotonergic Antidepressant with or without Naltrexone for Veterans with PTSD and Comorbid Alcohol Dependence. *Neuropsychopharmacology*, 37(4), 996-1004.

Postdeployment readjustment problems greatly increase risk for suicidal ideation

Key Findings: 45% of National Guard members returning from Iraq reported one or more financial or family problems three months post-deployment. After controlling for psychological problems and other potential confounders, veterans with the highest number of readjustment stressors were at 5.5 times greater risk of suicidal ideation than those with no stressors. Those who screened positive for a mental health disorder (PTSD, depression, alcohol dependence or illicit drug use) had four times the risk of suicidal ideation compared with those with no stressors.

Study type: Cross-sectional study with self-report assessments

Sample: 1,665 National Guard members who recently returned from Iraq

Implications: Findings demonstrate the high prevalence of readjustment stressors among service members post-deployment and the serious consequences of these stressors. The risk of suicidal ideation from readjustment stressors was greater than the risk from each of the psychiatric problems alone, indicating suicide screenings should include questions on readjustment stressors as well as psychiatric problems. More support for returning service members and their families is needed in order to reduce these stressors and their consequences.

Kline, A., Ciccone, D.S., Falca-Dodson, M., Black, C.M. & Losonczy, M. (2011). Suicidal ideation among National Guard troops deployed to Iraq: the association with postdeployment readjustment problems. *Journal of Nervous and Mental Disease*, 199(12), 914-20.

Propranolol not effective in preventing PTSD after acute trauma

Key Findings: Patients who received a 19-day course of the beta-adrenergic blocker propranolol starting four hours after experiencing an acute psychological trauma did not experience reduced PTSD symptoms or reduced physiological reactivity during script-driven traumatic imagery performed five weeks and 13 weeks post-trauma compared to patients who received a placebo. However, analysis of patients with high drug adherence demonstrated that their physiological reactivity during script-driven imagery was significantly lower than in patients who received a placebo.

Study type: Randomized controlled trial with clinical assessments

Sample: 41 civilian emergency department patients who had experienced an acute psychological trauma

Implications: Results from this clinical trial do not support the use of propranolol after acute traumatic events to prevent the development of PTSD. However, there is some limited support that propranolol administered post-trauma can be useful in reducing a traumatic conditioned response.

Hoge, E.A., Worthington, J.J., Nagurney, J.T., Chang, Y., Kay, E.B., Feterowski, C.M., et al. (2012). Effect of Acute Posttrauma Propranolol on PTSD Outcome and Physiological Responses During Script-Driven Imagery. *CNS Neuroscience & Therapeutics*, 18(1), 21-27.

Risky behaviors increase among soldiers with and without PTSD following a combat deployment

Key Findings: Health risk behaviors, specifically alcohol use and reckless driving, were shown to increase among soldiers after a combat deployment. These risky behaviors were notably higher for those reporting PTSD. In addition, these soldiers also reported escalated perceived invincibility post-deployment.

Study type: Longitudinal study with self-report measures

Sample: 319 active-duty soldiers from a combat arms brigade who deployed to Iraq

Implications: The findings illustrate that risky behavior increases for soldiers both with and without PTSD following a combat deployment. Post-deployment readjustment and mission readiness may be affected by the increased health risks that soldiers adopt after deployment, and these behaviors could carry potential risks to those in the soldiers' families and communities.

Kelley, A.M., Athy, J.R., Cho, T.H., Erickson, B., King, M. & Cruz, P. (in press). Risk propensity and health risk behaviors in U.S. army soldiers with and without psychological disturbances across the deployment cycle. *Journal of Psychiatric Research*.

Gender makes little difference on impact of combat exposure on mental health

Key Findings: Female veterans exposed to lower levels of combat exposure reported higher PTSD symptoms compared to males, but this relationship was not seen at higher levels of combat exposure. Across both high and low combat experience levels, females reported greater symptoms of common mental disorders (such as depression and anxiety) than males, and males reported greater alcohol misuse than females. However, adjusted analyses revealed similar responses to combat exposure according to gender, especially for PTSD symptoms.

Study type: Cross-sectional study with self-report assessments

Sample: 4,986 OEF/OIF veterans from the U.K. Armed Forces (432 women and 4,554 men)

Implications: This study found little evidence of gender differences in the impact of combat exposure on mental health, although rates of combat exposure and mental health symptom reporting do vary by

gender. Further research on gender differences to combat exposure should focus on specific combat exposures using detailed assessments.

Woodhead, C., Wessely, S., Jones, N., Fear, N.T. & Hatch, S.L. (in press). Impact of exposure to combat during deployment to Iraq and Afghanistan on mental health by gender. *Psychological Medicine*.

Implications of combat loss among Vietnam veterans

Key Findings: Losing a close friend during a combat operation was associated with increased past and current functional impairment and readjustment problems, even after controlling for other combat stressors and bereavements. Combat loss was initially associated with PTSD symptom severity, but this association disappeared after controlling for the same potential confounders as above.

Study type: Cross-sectional study using self-report assessment data collected in 1986-1988 for the National Vietnam Veterans Readjustment Study (NVVRS)

Sample: 1,637 Vietnam veterans enrolled in NVVRS

Implications: Combat loss may be a unique stressor that contributes to functional impairment in service members returning from combat deployments, above and beyond the effect of other combat stressors. Combat loss was not associated with PTSD in the presence of other combat traumas, which could reflect that the distress from this type of bereavement could be distinct from the fear conditioning that often characterizes PTSD.

Currier, J.M. & Holland, J.M. (2012). Examining the role of combat loss among Vietnam War veterans. *Journal of Traumatic Stress, 25*(1), 102-5.

Combat exposure associated with poorer PTSD treatment response

Key Findings: Increased combat exposure was associated with poorer treatment response among OEF/OIF veterans with PTSD participating in exposure therapy, as demonstrated by a reduced rate of change in PTSD symptoms. However, perceived pre-deployment preparedness moderated the association between combat exposure and treatment response, such that increased preparedness reduced the impact of combat exposure on treatment response.

Study type: Prospective study with clinical interviews and self-report assessments

Sample: 111 OEF/OIF veterans with PTSD

Implications: The findings emphasize the negative impact of increased combat exposure on PTSD treatment response, but provide preliminary evidence of the importance of increasing pre-deployment training and preparedness to attenuate the impact of combat exposure on PTSD treatment. Although more research is needed, PTSD interventions should account for combat frequency, and increased pre-deployment training may prove beneficial for reducing PTSD in the military population.

Price, M., Gros, D.F., Strachan, M., Ruggiero, K.J. & Acerno, R. (in press). Combat Experiences, Pre-Deployment Training, and Outcome of Exposure Therapy for Post-Traumatic Stress Disorder in Operation Enduring Freedom/Operation Iraqi Freedom Veterans. *Clinical Psychology & Psychotherapy*.

EMDR may lead to faster PTSD symptom reduction than brief eclectic psychotherapy

Key Findings: Eye movement desensitization and reprocessing (EMDR) and brief eclectic psychotherapy (a form of trauma-focused cognitive behavioral therapy) were equally effective in decreasing PTSD, depressive and general anxiety symptom severity among PTSD patients. Both forms of treatment also had similar drop-out rates. However, patients receiving EMDR showed significantly greater PTSD symptom reduction in the initial phases of treatment while symptom reduction was more gradual throughout the course of brief eclectic psychotherapy.

Study type: Randomized controlled trial with clinical interviews and self-report assessments

Sample: 140 outpatient civilian trauma survivors with PTSD, assigned to receive EMDR (n=70) or brief eclectic psychotherapy (n=70)

Implications: The difference in initial symptom reduction between EMDR and brief eclectic psychotherapy may be caused by the differing methods in which each treatment modality exposes the patient to the trauma. EMDR may be a more time-efficient therapy for PTSD as it may lead to faster symptom decline than brief eclectic psychotherapy, although further research on long-term effects is needed.

Nijdam, M.J., Gersons, B.P., Reitsma, J.B., de Jongh, A. & Olf, M. (2012). Brief eclectic psychotherapy v. eye movement desensitisation and reprocessing therapy for post-traumatic stress disorder: randomised controlled trial. *The British Journal of Psychiatry*, 200, 224-31.

Combat experiences associated with combat-related PTSD among OEF/OIF veterans

Key Findings: Although endorsement of each of the 15 items on the Combat Experiences Scale were more common among those with PTSD, only personally witnessing serious injury or death of a comrade and exposure to friendly fire were independent predictors of PTSD among OEF/OIF veterans.

Study type: Cross-sectional study with self-report measures

Sample: 285 National Guard/Reservist veterans who served in OEF/OIF

Implications: Results suggest that the combat experiences most strongly linked to PTSD are witnessing the injury or death of a comrade and exposure to friendly fire. A thorough examination of specific combat experiences as they relate to combat-related PTSD in OEF/OIF veterans may enable greater understanding of this relationship as well as guide prevention and treatment interventions for this particular population.

Pietrzak, R.H., Whealin, J.M., Stotzer, R.L., Goldstein, M.B. & Southwick, S.M. (2011). An examination of the relation between combat experiences and combat-related posttraumatic stress disorder in a sample of Connecticut OEF-OIF veterans. *Journal of Psychiatric Research*, 45(12), 1579-84.

Posttraumatic growth may protect against suicidal ideation among service members following combat deployment

Key Findings: After controlling for such suicide risk factors as PTSD, depression and substance abuse symptoms, higher reported posttraumatic growth (PTG) was associated with lower suicidal ideation among service members who have experienced combat exposure during deployment.

Study type: Cross-sectional study with self-report assessments

Sample: 5,302 service members with combat experience who were referred for mental health screening

Implications: Although service members often endorse combat stress symptoms after deployment, those who also endorse PTG may be more resistant to suicidal ideation. Future research initiatives should further explore the potential role of PTG as a clinical

tool that may be used to mitigate suicidal ideation among service members exposed to combat.

Bush, N.E., Skopp, N.A., McCann, R. & Luxton, D.D. (2011). Posttraumatic growth as protection against suicidal ideation after deployment and combat exposure. *Military Medicine*, 176(11), 1215-22.

Prolonged exposure reduces PTSD and depression in veterans with TBI

Key Findings: OEF/OIF veterans with PTSD and traumatic brain injury (TBI) who received eight to 18 sessions of standard prolonged exposure therapy for PTSD (with slight adjustments to account for patients' cognitive deficits, such as memory-enhancing strategies, increased structure or additional session time) showed significant decreases in PTSD and depression symptoms, with large effect sizes.

Study type: Treatment outcome study with clinical interviews and self-report assessments

Sample: 10 OEF/OIF veterans with a history of mild to moderate TBI and chronic PTSD

Implications: These preliminary findings demonstrate prolonged exposure therapy can be a safe and effective treatment option for veterans with PTSD and mild to moderate TBI with current cognitive impairment. Further study with larger sample sizes is needed to confirm these findings.

Wolf, G.K., Strom, T.Q., Kehle, S.M. & Eftekhari, A. (2012). A preliminary examination of prolonged exposure therapy with Iraq and Afghanistan veterans with a diagnosis of posttraumatic stress disorder and mild to moderate traumatic brain injury. *Journal of Head Trauma Rehabilitation*, 27(1), 26-32.

Interdependent PTSD and postconcussive symptom reduction among PTSD/TBI patients

Key Findings: PTSD and postconcussive symptoms significantly decreased among veterans with PTSD and TBI over the course of an 8-week residential PTSD/TBI treatment program, which included cognitive processing therapy, psychoeducational groups, a cognitive enhancement group and individualized speech/cognitive treatment. Moreover, the authors found that decreases in PTSD symptoms were associated with decreases in postconcussive symptoms.

Study type: Prospective study with clinical interviews and self-report assessments

Sample: 28 male veterans with PTSD and TBI who completed an 8-week residential PTSD/TBI program

Implications: PTSD and postconcussive symptoms may be interdependent, suggesting that decreasing either postconcussive or PTSD symptom severity will be related to a decrease in the other. However, directionality of this relationship is not yet known, so future studies should attempt to identify if PTSD symptom reduction leads to decreases in postconcussive symptoms or vice versa.

Walter, K.H., Kiefer, S.L. & Chard, K.M. (2012). Relationship between posttraumatic stress disorder and postconcussive symptom improvement after completion of a posttraumatic stress disorder/traumatic brain injury residential treatment program. *Rehabilitation Psychology*, 57(1), 13-17.

CONFERENCE REGISTRATION IS OPEN!

The Navy and Marine Corps Combat & Operational Stress Control Conference 2012 will be held May 23-24, 2012, at the Town & Country Resort and Convention Center in San Diego. To register, please visit our website: www.nccosc.navy.mil.



Combined prolonged exposure and SSRI treatment for PTSD

Key Findings: Survivors of the World Trade Center attack with PTSD who received 10 weeks of prolonged exposure (PE) therapy combined with the SSRI paroxetine experienced significantly greater alleviation in PTSD symptoms, greater remission and response rate, and improved quality of life compared with those who received PE and a placebo.

Study type: Randomized controlled trial with clinical interviews and self-report assessments

Sample: 37 adult survivors of the World Trade Center attack with PTSD, assigned to receive PE and paroxetine (n=19) or PE and a placebo (n=18)

Implications: These initial findings suggest that PTSD treatment using a form of CBT (e.g., prolonged exposure therapy) combined with an SSRI (e.g., paroxetine) yields more efficacious treatment outcomes than CBT alone. Further research using larger populations with diverse forms of PTSD is needed to further support and extend these findings.

Schneier, F.R., Neria, Y., Pavlicova, M., Hembree, E., Suh, E.J., Amsel, L., et al. (2012). Combined prolonged exposure therapy and paroxetine for PTSD related to the World Trade Center attack: a randomized controlled trial. *American Journal of Psychiatry*, 169(1), 80-8.

TEST YOUR KNOWLEDGE!

According to the summary “Psychological and psychosocial impact of deployment on military healthcare professionals” (pg. 2), how did deployment affect officers serving as healthcare providers?

- A. Providers reported greater symptoms of PTSD, depression and anxiety compared to officers not working in healthcare
- B. Providers reported greater stress compared to officers not working in healthcare
- C. Providers reported impaired functioning compared to officers not working in healthcare
- D. All of the above

Answer: D

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