Journal of Psychiatric Research 159 (2023) 130–134

Contents lists available at ScienceDirect

Journal of Psychiatric Research

journal homepage: www.elsevier.com/locate/jpsychires

Perceived social support moderates the relation between forward-focused coping and PTSD symptoms in World Trade Center trauma survivors

Mary Kowalchyk [a], Eva Chernoff [a], Hannah R. Brinkman [a], Adam D. Brown [b,c], Robert H. Pietrzak [a,d,e], Adriana Feder [a,*]

[a] Department of Psychiatry, Icahn School of Medicine at Mount Sinai, New York, NY, USA
[b] Department of Psychology, The New School for Social Research, New York, NY, USA
[c] Department of Psychiatry, New York University School of Medicine, New York, NY, USA
[d] Department of Psychiatry, Yale University School of Medicine, New Haven, CT, USA
[e] U.S. Department of Veterans Affairs National Center for Posttraumatic Stress Disorder, VA Connecticut Healthcare System, West Haven, CT, USA

ARTICLE INFO

Keywords:
PTSD
9/11
PACT
Social support
Trauma

ABSTRACT

Social support and perceived ability to cope with trauma have been linked to severity of PTSD symptoms. While previous literature has highlighted the influence of trauma coping style on PTSD severity, data are lacking regarding factors that may moderate this association. Such information may help inform more personalized treatments for PTSD. Toward this end, we analyzed data from 100 treatment-seeking WTC responders and survivors with full or subthreshold World Trade Center (WTC)-related PTSD who completed measures of perceived ability to cope with trauma and perceived social support prior to treatment initiation. Correlation analyses revealed that higher forward-focused perceived ability to cope ($r = -0.24$) and perceived social support ($r = -0.32$) were each associated with lower severity of PTSD symptoms. In a multivariable regression analysis, perceived social support emerged as a significant moderator of the relation between forward-focused coping and overall PTSD symptom severity ($\beta = -0.36$). Specifically, among individuals with higher forward-focused coping, those with higher social support had lower severity of symptoms than those with lower social support. Results suggest that interventions to bolster social support among trauma survivors with a forward-focusing coping style may help mitigate severity of PTSD symptoms in treatment-seeking trauma survivors with PTSD symptoms.

1. Introduction

Following the September 11, 2001, World Trade Center (WTC) attacks, among the hundreds of thousands of affected WTC survivors and WTC rescue, recovery, and clean-up personnel ("WTC responders"), a substantial proportion continue to suffer from clinically significant posttraumatic stress disorder (PTSD) symptoms. Recent studies conducted in the second decade following 9/11/2001 have shown that rates of PTSD remain elevated in these populations, ranging from 14.3 to 21.9%. (Chen et al., 2020; Feder et al., 2016; Jordan et al., 2019; Welch et al., 2016; Caramanica et al., 2014; Pietrzak et al., 2014). Chronic PTSD symptoms are in turn associated with reduced psychosocial functioning and quality of life in WTC responder and survivors. (Chen et al., 2020; Farfel et al., 2008; Pietrzak et al., 2012). To refine treatment interventions for the WTC and other trauma survivor populations, ongoing research initiatives to identify factors that may help facilitate trauma recovery and mitigate PTSD risk are needed.

One factor that might affect recovery from trauma and PTSD is an individual's perception of their ability to cope following trauma exposure. For example, research among U.S. military veterans has found that those with PTSD report lower perceived coping ability relative to veterans without PTSD (Bartholomew et al., 2017). Extant work examining the link between perceived coping ability and adaptation to traumatic stress has identified two predominant coping styles: *trauma-focused coping*, or one's ability to reflect on or face feelings about the traumatic event; and *forward-focused coping*, or one's ability to maintain goals and plans following a traumatic event (Bonanno et al., 2011). In addition to the specific type of coping strategy used, perceived coping ability also reflects one's ability to flexibly employ various coping strategies based on individual and situational needs. Indeed, Park et al. (2015) found that

* Corresponding author.
E-mail address: adriana.feder@mssm.edu (A. Feder).

https://doi.org/10.1016/j.jpsychires.2023.01.018
Received 11 July 2022; Received in revised form 4 November 2022; Accepted 9 January 2023
Available online 11 January 2023

greater coping flexibility was linked to lower PTSD and depressive symptoms among trauma-exposed Korean adults (Park et al., 2015). While perceived coping ability appears to underlie positive mental health outcomes among trauma-exposed military and civilian populations, factors that may help facilitate effective and flexible coping with trauma remain less clear.

In addition to one's perceived coping ability, social support, or the availability of tangible, emotional, and informational support from others, is considered one of the strongest protective factors following a traumatic event (Berntsen and Rubin, 2006; Ozer et al., 2003). The relationship between low perceived social support and greater PTSD symptom severity has been consistently documented across various trauma-exposed populations (Pietrzak et al., 2009; Barrett and Mizes, 1988; Boscarino, 1995; Duax et al., 2014; Wilcox, 2010; Gros et al., 2016). Perceived social support and perceived ability to cope with trauma have been found to be independently negatively associated with PTSD (Bonanno et al., 2011; Chung and Shakra, 2020; Haden et al., 2007; Pinciotti et al., 2017; Haden et al., 2007, 2007; Park et al., 2015). Given the importance of the social context in facilitating trauma recovery (Berntsen and Rubin, 2006; Ozer et al., 2003), it is plausible that greater social support may provide a more adaptive context within which to engage in trauma- and forward-focused coping (e.g., trauma survivors have supportive others who can help them process the event), which could in turn help mitigate PTSD symptoms.

Prior work has investigated coping abilities in various samples, including veterans (Bartholomew et al., 2017) and other trauma exposed individuals (Bonanno et al., 2011; Jordan et al., 2021; Knowles and O'Connor, 2015; Pinciotti et al., 2017). To date, however, no known study has examined whether perceived social support may moderate the relation between perceived ability to cope and PTSD symptoms in a sample of WTC responders and survivors.

In the current study, we examined the relation between perceived ability to cope using the PACT scale, perceived support, and PTSD symptoms in treatment-seeking WTC responders and survivors with clinically significant WTC-related PTSD symptoms. We also examined the potential moderating influence of perceived social support on the relation between perceived ability to cope with trauma and severity of PTSD symptoms.

2. Methods

2.1. Participants

Data for this project was collected from the first 100 participants who were subsequently enrolled in a clinical trial of online psychotherapies for WTC responders and survivors with full or subthreshold WTC-related PTSD (Brinkman et al., 2021; ClinicalTrials.gov Identifier: NCT03154151). Data were collected between August 2017 and July 2020, on average 17.2 years following the WTC attacks on September 11, 2001. The sample size for the larger trial was powered to detect a 0.5 SD differential effect size between treatment groups. After initially completing the WTC-related PTSD Checklist for DSM-5 (PCL-5) online for screening purposes, the presence of past-month full or subthreshold WTC-related PTSD was confirmed with the Mini International Neuropsychiatric Interview (MINI) for DSM-5 (Sheehan et al., 1998; The Harm Research Institute, 2016) which was administered by trained raters. At screening, 74% of the sample met criteria for full WTC-related PTSD and 26% met criteria for subthreshold WTC-related PTSD. Full PTSD was defined as meeting DSM-5 criteria for PTSD. Subthreshold PTSD was operationalized using two of the most commonly used definitions in the literature (Pietrzak et al., 2009 & Marmar et al., 2015), adapted for DSM-5 criteria: (1) meeting one Criterion B intrusion symptom *and either* three symptoms of combined Criteria C and D (avoidance and negative alterations in cognition or mood) *or* two symptoms of Criterion E alterations in arousal and reactivity; or (2) meeting one Criterion B intrusion symptom *and* either one symptom of combined Criteria C and D (avoidance and negative alterations in cognition or mood) *and* one Criterion E symptom of alterations in arousal and reactivity. For both full and subthreshold PTSD, at least moderate impairment or distress was required at screening.

2.2. Measures

Prior to treatment randomization, participants completed an online battery of self-report questionnaires, as well as a telephone-administered diagnostic interview. Measures relevant to the current report include:

PTSD Checklist for DSM-5. The PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013) is a 20-item self-report rating scale corresponding to the DSM-5 symptom criteria for PTSD. The scale has shown strong internal consistency ($\alpha = 0.94$) and test-retest reliability ($r = 0.82$) (Blevins et al., 2015).

Mini International Neuropsychiatric Interview for DSM-5. The Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998; The Harm Research Institute, 2016) is a brief structured diagnostic interview that is widely used in research. In this study, the MINI was employed to assess eligibility of potential participants, including confirming the presence of full or subthreshold PTSD and assessing for any comorbid diagnoses, including exclusionary ones.

Perceived Coping Ability. The Perceived Ability to Cope with Trauma scale (PACT; Bonanno et al., 2011) is a 20-item self-report measure assessing perceived coping abilities following a traumatic event. There are two subscales that have good-to-excellent validity and reliability: forward-focused ($\alpha = 0.91$) and trauma-focused ($\alpha = 0.79$). The forward-focused subscale measures the ability to maintain goals and plans following a traumatic event, while the trauma-focused subscale measures the ability to face feelings and cognitions relating to a traumatic event. Additionally, the PACT yields a flexibility score to measure the ability to engage in both forward-focused and trauma-focused coping strategies following a traumatic event. The flexibility score is calculated by subtracting the polarity (an absolute value of the difference between forward-focused and trauma-focused scores) from the sum of the forward-focused and trauma-focused scores: flexibility = (forward-focused + trauma-focused) - |forward-focused – trauma-focused|. A higher flexibility score indicates a greater perceived ability to engage in both forward- and trauma-focused coping strategies.

Social Support**.** The Medical Outcomes Study – Social Support Survey (MOS-SSS; Sherbourne and Stewart, 1991) is a self-report survey utilizing a 5-point Likert scale (1 = *None of the time* to 5 = *All of the time)* to assess perceived social support, including how often the respondent feels they have someone to confide in, help with daily chores, or someone they can turn to for love and comfort. An abbreviated 5-item version of the MOS-SSS was employed in this study ($\alpha = 0.86$), with the average of these items serving as a measure of social support (Amstadter et al., 2010).

Trauma History. The Trauma History Screen (THS) was used to assess exposure to the lifetime occurrence of 14 potentially traumatic events; the NHRVS additionally assessed exposure to life-threatening illness or injury. The sum of potentially traumatic events endorsed, ranging from 0 to 15, was used as an index of lifetime trauma burden. (Carlson et al., 2011).

2.3. Data analysis

First, bivariate correlation analyses were conducted between predictor and criterion variables of interest including WTC-related PTSD symptom severity (PCL-5), forward-focused and trauma-focused perceived ability to cope, as well as coping flexibility (PACT), and perceived social support (MOS-SSS).To assess the main and interactive effects of perceived coping ability (forward-focused, trauma-focused, and coping flexibility) and perceived social support on PTSD symptom severity, we computed a multivariable linear regression model controlling for participant age, lifetime trauma exposure, and mental health

treatment history. Participant sex and type (i.e., traditional responder vs. non-traditional responder vs. survivor) were not included as covariates, as bivariate analyses did not indicate significant correlations between these variables and PTSD severity.

3. Results

As shown in Table 1, this sample of 100 WTC responders and survivors were mostly college educated, white men who are married or partnered. Of the sample, 23% met criteria for comorbid depressive episode on the MINI, 17% met criteria for comorbid generalized anxiety disorder on the MINI, and 76% reported a history of mental health treatment (past psychotherapy and/or lifetime psychotropic medication). Participants reported an average of 4.7 (*SD* = 2.8) lifetime traumas (e.g. major accident, sexual assault) on the THS (see Table 2).

Correlation analyses revealed that trauma-focused perceived ability to cope (r = −0.14) and coping flexibility (r = −0.17) were not significantly associated with WTC-related PTSD symptom severity (p's > 0.9). However, higher forward-focused perceived ability to cope (r = −0.24) and perceived social support (r = −0.32) were each associated with lower overall PTSD symptom severity. In a regression analysis, neither of these variables was significant (p's > 0.25), but perceived social support emerged as a significant moderator of the relation between forward-focused coping and overall PTSD symptom severity (β = −0.36). See Fig. 1. Specifically, greater engagement in forward-focused coping was associated with lower PTSD symptom severity among participants who reported higher levels of perceived social support.

4. Discussion

In the current study, we sought to understand how WTC responders and survivors who are still struggling with WTC-related PTSD two decades after the 9/11 attacks may better cope with their symptoms. While social support (Duax et al., 2014; Proescher et al., 2020; Boscarino, 1995) and coping strategies (Bartholomew et al., 2017; Bonanno et al., 2011; Feder et al., 2016; Park et al., 2015) have been previously examined both individually and jointly (Haden et al., 2007) in PTSD, the relationship between them had yet to be explored in this population.

The most notable finding from the current study is that greater engagement in forward-focused coping was associated with lower WTC-related PTSD symptom severity among participants who reported higher levels of perceived social support. One potential interpretation of this finding may be that individuals who engage in forward-focused coping (e.g., stay focused on current goals and plans, look for a silver lining) may be more effective at eliciting social support, which in turn may help mitigate PTSD symptoms (Saltzman et al., 2018). Conversely, those who perceive higher levels of social support may feel more capable of engaging in forward-focused coping strategies due to the social support that they receive. These findings may further enhance our understanding of the relationship between social support and PTSD (Wang et al., 2021; Price et al., 2018). Further research is needed to determine the directionality of this relationship and the combined benefits this relationship may yield in mitigating PTSD severity.

Greater engagement in forward-focused, but not trauma-focused, coping was also associated with lower WTC-related PTSD symptom severity in bivariate analyses. This finding suggests that forward-focused coping may be more effective in mitigating PTSD symptoms than conjuring and reliving traumatic memories from two decades ago. Recent work has similarly shown that forward-focused coping may be effective in mitigating stress and PTSD symptoms in other samples, including older adults dealing with stress related to the COVID-19 pandemic (Jordan, L. et al., 2021) and human rights advocates (Rodin et al., 2017). Further, several studies have found unique future-thinking patterns in individuals with PTSD compared to those without PTSD, including overgeneralizations in autobiographical memories and imagining fewer specific future events following a positive cue (Brown, A. et al., 2013; Kleim, B. et al., 2014). Taken together, these findings

Table 1
Sample characteristics.

n = 100	n or mean	% or SD
Age	54.2	9.8
Male sex	60	60%
Race-Ethnicity		
White	62	62%
African American	10	10%
Hispanic	17	17%
Asian	2	2%
Other/Unknown	9	9%
Education		
Some High School/High School Graduate	7	7%
Some College	34	34%
College Graduate	36	36%
Graduate School	23	23%
Marital Status		
Single	13	13%
Married/Partnered	73	73%
Widowed/Divorced/Separated	14	14%
WTC Participant Type		
Traditional Responder (e.g., Police Officer)	46	46%
Non-traditional Responder (e.g., Construction Worker)	24	24%
Survivor	30	30%
Number of lifetime traumas	4.7	2.8
Total PCL-5 score	27.7	13.4
Met for current depressive episode on MINI	23	23%
Met for generalized anxiety disorder on MINI	17	17%
Forward-focused coping score	4.4	1.1
Trauma-focused coping score	4.4	1.2
Coping Flexibility score	70.7	19.1
Perceived social support score	3.2	1.0
History of mental health treatment	76	76%
Current Psychotropic Medication Use	21	21%

Table 2
Results of linear regression analysis predicting severity of PTSD symptoms.

	β	t	p
Age*	0.19	2.09	0.039
Lifetime traumas	0.08	0.87	0.39
Lifetime MH treatment	−0.13	1.38	0.17
Trauma-focused coping	−0.02	0.15	0.88
Forward-focused coping	0.13	0.83	0.41
Coping flexibility	−0.01	0.15	0.88
Social support	−0.05	0.26	0.79
Trauma-focused coping x Social support	−0.11	0.64	0.52
Forward-focused coping x Social support***	−0.35	3.81	<.001
Coping flexibility x Social support	0.03	0.28	0.78

Significant association: *p < 0.05; ***p < 0.001.

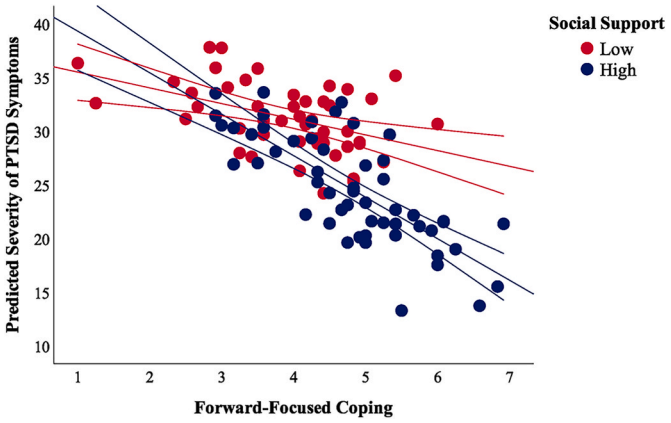

Fig. 1. Moderating effect of social support on forward-focused coping and overall PTSD symptom severity.

underscore the potential importance of targeting forward-focused and future thinking interventions as potential treatments for individuals with PTSD, particularly those who suffered a traumatic event many years prior to treatment engagement.

4.1. Limitations

Limitations of this study must be noted. First, data were collected from a sample of WTC responders and survivors enrolled in an online clinical trial and who screened positive for full or subthreshold WTC-related PTSD. Screening criteria for this trial involved excluding participants with more severe forms of psychopathology that frequently co-occur with PTSD symptoms including, but not limited to, current suicidal or homicidal ideation, problematic alcohol or substance use, and psychotic or marked dissociative symptoms. As a result, the final sample included here may not be representative of the full spectrum of symptom severity among those suffering from PTSD. This should be taken into consideration when considering the generalizability of these findings to other populations suffering from PTSD. Additionally, as this is an online study, the participant sample was further reduced to those who had access to a computer with Wi-Fi and those who had basic computer knowledge (i.e. typing, able to log in to the online platform, navigating the online platform, etc.). These criteria may further hinder the generalizability of these findings to larger populations of those with PTSD. Those with access to and the knowledge of how to use a computer may be representative of higher education or higher socio-economic status that the population's average.

Second, there are limitations associated with the cross-sectional data analysis. These findings represent a snapshot in time, almost two decades following the 9/11 attacks, of perceived social-support and coping abilities, which may have been reported differently at another point in time since the attacks. It's also possible that the results from this study would not withstand a longitudinal investigation, as additional factors (trauma exposures or other significant life events) may alter one's outlook on their coping abilities or perceived social support. Finally, study participants were treatment-seeking or open to participating in a treatment study and thus perhaps less avoidant than PTSD sufferers who choose not to seek treatment due to fear of re-experiencing their trauma. While these participants did meet criteria for full or subthreshold PTSD, their willingness to engage in an exposure-based therapy involving reliving their traumatic experience may reflect lower experiential avoidance than other individuals with PTSD. This potential comparatively lower degree of avoidance might result in higher readiness to elicit social support or might reduce the impact of engaging in trauma-focused coping on overall PTSD symptom severity.

5. Conclusion

Notwithstanding these limitations, results of this study suggest that higher levels of perceived social support may moderate the relation between greater forward-focused coping ability and lower PTSD symptom severity in treatment-seeking WTC responders and survivors with clinically significant PTSD symptoms. These findings further extant knowledge regarding factors that may contribute to chronic PTSD symptoms in WTC responders and survivors following the 9/11 WTC attacks. Further research is needed to examine the role of incorporating the assessment and monitoring of forward-focused coping and perceived social support into existing treatment interventions for WTC and other trauma-exposed populations with PTSD.

Funding

This work was supported by the Center for Disease Control and Prevention, National Institute of Occupational Safety and Health [grant number U01OH010729].

Author contributions

Drs. Adriana Feder and Robert H. Pietrzak, multiple principal investigators of this project, oversaw all aspects of project design and conduct. Hannah Brinkman and Mary Kowalchyk contributed to the data collection. Dr. Pietrzak conducted the statistical analyses for this study. Dr. Adam Brown contributed his expertise in PTSD, coping with trauma, and the Perceived Ability to Cope with Trauma (PACT) scale. Ms. Kowalchyk and Dr. Eva Chernoff drafted this manuscript, and all authors contributed to editing the manuscript.

Fig. 1 shows the moderating effect of social support (indicated by the red and blue dots) on forward-focused coping (forward-focused subscale scores on the x-axis) and overall PTSD symptom severity (PCL-5 scores on the y-axis).

Author statement

Drs. Adriana Feder and Robert H. Pietrzak, multiple principal investigators of this project, oversaw all aspects of project design and conduct. Hannah Brinkman and Mary Kowalchyk contributed to the data collection. Dr. Pietrzak conducted the statistical analyses for this study. Dr. Adam Brown contributed his expertise in PTSD, coping with trauma, and the Perceived Ability to Cope with Trauma (PACT) scale. Ms. Kowalchyk and Dr. Eva Chernoff drafted this manuscript, and all authors contributed to editing and revising the manuscript.

Acknowledgements

We would like to acknowledge Clyde Schechter for his work in preliminary selection of potential participants using the WTC-HP Data Center data. Data were provided by the WTC Health Program General Responder Data Center at Mount Sinai (CDC/NIOSH contract 200-2017-93325). We would also like to acknowledge the WTC-HP Data Center faculty and staff, the WTC Health Registry faculty and staff, the Voice Center for Resilience, and the Feel Foundation for their assistance with the recruitment of participants for this study. This study would not have been possible without the dedication and contributions of Steven M. Southwick, MD, who inspired our research to promote the resilience and well-being in WTC responders and other trauma survivors. We dedicate this study to his memory.

References

Amstadter, A.B., Begle, A.M., Cisler, J.M., Hernandez, M.A., Muzzy, W., Acierno, R., 2010. Prevalence and correlates of poor self-rated health in the United States: the national elder mistreatment study. Am. J. Geriatr. Psychiatr. : official journal of the American Association for Geriatric Psychiatry 18 (7), 615–623. https://doi.org/10.1097/JGP.0b013e3181ca7ef2.

Barrett, T.W., Mizes, J.S., 1988. Combat level and social support in the development of posttraumatic stress disorder in Vietnam veterans. Behavior modification 12 (1), 100–115.

Bartholomew, T.T., Badura-Brack, A.S., Leak, G.K., Hearley, A.R., McDermott, T.J., 2017. Perceived ability to cope with trauma among US Combat veterans. Mil. Psychol. 29 (3), 165–176.

Berntsen, D., Rubin, D.C., 2006. The centrality of event scale: a measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. Behav. Res. Ther. 44 (2), 219–231. https://doi.org/10.1016/j.brat.2005.01.009.

Blevins, C.A., Weathers, F.W., Davis, M.T., Witte, T.K., Domino, J.L., 2015. The posttraumatic stress disorder checklist for DSM-5 (PCL-5): development and initial psychometric evaluation. J. Trauma Stress 28 (6), 489–498. https://doi.org/10.1002/jts.22059.

Bonanno, G.A., Pat-Horenczyk, R., Noll, J., 2011. Coping flexibility and trauma: the perceived ability to Cope with Trauma (PACT) scale. Psychol. Trauma: Theory, Research, Practice, and Policy 3 (2), 117–129. https://doi.org/10.1037/a0020921.

Boscarino, J.A., 1995. Post-traumatic stress and associated disorders among Vietnam veterans: the significance of combat exposure and social support. J. Trauma Stress 8 (2), 317–336.

Brinkman, H.R., Kowalchyk, M.L., Cahn, L., Aaronson, C.J., Böttche, M., Presseau, C., et al., 2021. Internet-based cognitive behavioral therapy versus internet-based modified present-centered therapy for world trade center responders and survivors with posttraumatic stress disorder: rationale and design of a randomized controlled trial. Int. J. 8 (3), 202.

Brown, A.D., Root, J.C., Romano, T.A., Chang, L.J., Bryant, R.A., Hirst, W., 2013. Overgeneralized autobiographical memory and future thinking in combat veterans with posttraumatic stress disorder. J. Behav. Ther. Exp. Psychiatr. 44 (1), 129–134.

Carlson, E.B., Smith, S.R., Palmieri, P.A., Dalenberg, C., Ruzek, J.I., Kimerling, R., Burling, T.A., Spain, D.A., 2011. Development and validation of a brief self-report measure of trauma exposure: the Trauma History Screen. Psychol. Assess. 23 (2), 463–477. https://doi.org/10.1037/a0022294.

Caramanica, K., Brackbill, R.M., Liao, T., Stellman, S.D., 2014. Comorbidity of 9/11-related PTSD and depression in the world trade center health Registry 10-11 Years postdisaster. J. Trauma Stress 27 (6), 680–688. https://doi.org/10.1002/jts.21972.

Chen, Connie, Salim, Ryan, Rodriguez, Janice, Singh, Ritika, Schechter, Clyde, Dasaro, Christopher R., Todd, Andrew, Crane, Michael, Moline, Jacqueline, Udasin, Iris, Harrison, Denise, Luft, B., 2020. The burden of subthreshold posttraumatic stress disorder in world trade center responders in the second decade after 9/11. J. Clin. Psychiatr. 81 (1) https://doi.org/10.4088/JCP.19m12881.

Chung, M.C., Shakra, M., 2020. The association between trauma centrality and posttraumatic stress among Syrian refugees: the impact of cognitive distortions and trauma-coping self-efficacy. J. Interpers Violence. https://doi.org/10.1177/0886260520926311.

Duax, J., Bohnert, K., Rauch, S., Defever, A., 2014. Posttraumatic stress disorder symptoms, levels of social support, and emotional hiding in returning veterans. J. Rehabil. Res. Dev. 51 (4), 571.

Farfel, M., DiGrande, L., Brackbill, R., Prann, A., Cone, J., Friedman, S., Walker, D.J., Pezeshki, G., Thomas, P., Galea, S., Williamson, D., Frieden, T.R., Thorpe, L., 2008. An overview of 9/11 experiences and respiratory and mental health conditions among world trade center health Registry enrollees. J. Urban Health 85 (6), 880–909. https://doi.org/10.1007/s11524-008-9317-4.

Feder, A., Mota, N., Salim, R., Rodriguez, J., Singh, R., Schaffer, J., et al., 2016. Risk, coping and PTSD symptom trajectories in World Trade Center responders. J. Psychiatr. Res. 82, 68–79.

Gros, D.F., Flanagan, J.C., Korte, K.J., Mills, A.C., Brady, K.T., Back, S.E., 2016. Relations among social support, PTSD symptoms, and substance use in veterans. Psychology of Addictive Behaviors 30 (7), 764.

Haden, S.C., Scarpa, A., Jones, R.T., Ollendick, T.H., 2007. Posttraumatic stress disorder symptoms and injury: the moderating role of perceived social support and coping for young adults. Pers. Indiv. Differ. 42 (7), 1187–1198. https://doi.org/10.1016/j.paid.2006.09.030.

Jordan, L., Woodward, J., Pena, G., Arnold-Nedimala, N., Won, J., Callow, D., Smith, C., 2021. Forward-focused Coping Predicts Better Mental Health Outcomes in Mid- to Late-Life during the COVID-19 Pandemic. Aging & Mental Health, pp. 1–9.

Jordan, H.T., Osahan, S., Li, J., Stein, C.R., Friedman, S.M., Brackbill, R.M., et al., 2019. Persistent mental and physical health impact of exposure to the September 11, 2001 World Trade Center terrorist attacks. Environ. Health 18 (1), 12.

Kleim, B., Graham, B., Fihosy, S., Stott, R., Ehlers, A., 2014. Reduced specificity in episodic future thinking in posttraumatic stress disorder. Clin. Psychol. Sci. 2 (2), 165–173.

Knowles, L.M., O'Connor, M.F., 2015. Coping flexibility, forward focus and trauma focus in older widows and widowers. Bereave. Care 34 (1), 17–23.

Marmar, C.R., et al., 2015. Course of posttraumatic stress disorder 40 Years after the vietnam war: findings from the national vietnam veterans longitudinal study. JAMA Psychiatr. 72, 875–881.

Ozer, E.J., Best, S.R., Lipsey, T.L., Weiss, D.S., 2003. Predictors of posttraumatic stress disorder and symptoms in adults: a meta-analysis. Psychological bulletin 129 (1), 52.

Park, M., Chang, E.R., You, S., 2015. Protective role of coping flexibility in PTSD and depressive symptoms following trauma. Pers. Indiv. Differ. 82, 102–106. https://doi.org/10.1016/j.paid.2015.03.007.

Pietrzak, R.H., Feder, A., Singh, R., Schechter, C.B., Bromet, E.J., Katz, C.L., Reissman, D. B., Ozbay, F., Sharma, V., Crane, M., Harrison, D., Herbert, R., Levin, S.M., Luft, B.J., Moline, J.M., Stellman, J.M., Udasin, I.G., Landrigan, P.J., Southwick, S.M., 2014. Trajectories of PTSD risk and resilience in World Trade Center responders: an 8-year prospective cohort study. Psychol. Med. 44 (1), 205–219. https://doi.org/10.1017/S0033291713000597.

Pietrzak, R.H., Goldstein, M.B., Malley, J.C., Johnson, D.C., Southwick, S.M., 2009. Subsyndromal posttraumatic stress disorder is associated with health and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom. Depress. Anxiety 26, 739–744.

Pietrzak, R.H., Johnson, D.C., Goldstein, M.B., Malley, J.C., Southwick, S.M., 2009. Perceived stigma and barriers to mental health care utilization among OEF-OIF veterans. Psychiatr. Serv. 60 (8), 1118–1122.

Pietrzak, Robert H., Schechter, C.B., Bromet, E.J., Katz, C.L., Reissman, D.B., Ozbay, F., Sharma, V., Crane, M., Harrison, D., Herbert, R., Levin, S.M., Luft, B.J., Moline, J.M., Stellman, J.M., Udasin, I.G., Landrigan, P.J., Southwick, S.M., 2012. The burden of full and subsyndromal posttraumatic stress disorder among police involved in the World Trade Center rescue and recovery effort. J. Psychiatr. Res. 46 (7), 835–842. https://doi.org/10.1016/j.jpsychires.2012.03.011.

Pinciotti, C.M., Seligowski, A.V., Orcutt, H.K., 2017. Psychometric properties of the PACT Scale and relations with symptoms of PTSD. Psychol. Trauma: Theory, Research, Practice, and Policy 9 (3), 362–369. https://doi.org/10.1037/tra0000206.

Price, M., Lancaster, C.L., Gros, D.F., Legrand, A.C., van Stolk-Cooke, K., Acierno, R., 2018. An examination of social support and PTSD treatment response during prolonged exposure. Psychiatry 81 (3), 258–270.

Proescher, E., Aase, D.M., Passi, H.M., Greenstein, J.E., Schroth, C., Phan, K.L., 2020. Impact of Perceived Social Support on Mental Health, Quality of Life, and Disability in Post–9/11 US Military Veterans. Armed Forces & Society, 0095327X20919922.

Rodin, R., Bonanno, G.A., Knuckey, S., Satterthwaite, M.L., Hart, R., Joscelyne, A., et al., 2017. Coping flexibility predicts post-traumatic stress disorder and depression in human rights advocates. Int. J. Ment. Health 46 (4), 327–338.

Saltzman, L.Y., Pat-Horenczyk, R., Lombe, M., Weltman, A., Ziv, Y., McNamara, T., et al., 2018. Post-combat adaptation: improving social support and reaching constructive growth. Hist. Philos. Logic 31 (4), 418–430.

Sheehan, D.V., Lecrubier, Y., Sheehan, K.H., Amorim, P., Janavs, J., Weiller, E., Hergueta, T., Baker, R., Dunbar, G.C., 1998. The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J. Clin. Psychiatr. 59 (Suppl. 20), 22–33 quiz 34-57. PMID: 9881538.

Sherbourne, C.D., Stewart, A.L., 1991. The MOS social support survey. Soc. Sci. Med. 32 (6), 705–714. https://doi.org/10.1016/0277-9536(91)90150-b, 1982.

The Harm Research Institute, 2016. M.I.N.I (Harm Research Institute). https://harmresearch.org/mini/.

Wang, Y., Chung, M.C., Wang, N., Yu, X., Kenardy, J., 2021. Social support and posttraumatic stress disorder: a meta-analysis of longitudinal studies. Clin. Psychol. Rev. 85, 101998.

Weathers, F.W., Litz, B.T., Keane, T.M., Palmieri, P.A., Marx, B.P., Schnurr, P.P., 2013. The PTSD Checklist for *DSM-5* (PCL-5). Scale available from: the National Center for PTSD at. www.ptsd.va.gov.

Welch, A.E., Caramanica, K., Maslow, C.B., Brackbill, R.M., Stellman, S.D., Farfel, M.R., 2016. Trajectories of PTSD among lower manhattan residents and area workers following the 2001 world trade center disaster, 2003-2012. J. Trauma Stress 29 (2), 158–166.

Wilcox, S., 2010. Social relationships and PTSD symptomatology in combat veterans. Psychol. Trauma: Theory, Research, Practice, and Policy 2 (3), 175.