

Posttraumatic Stress Disorder Among First Responders: Role of Personality Traits and Category of Responder

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Abstract

This study explored the roles of Personality traits and categories of first responders in predicting Posttraumatic stress disorder (PTSD) among First responders in Ibadan, south-west Nigeria. A purposive sample of 128 male and female first responders cutting across Fire fighters, Policemen, Federal road safety corps and volunteers participated in the study which utilized a simple questionnaire in assessing the presence of PTSD symptoms and personality traits. Multiple regression analysis showed a significant independent influence of Neuroticism ($\beta=0.19$; $t=2.06$; $p<.05$) on PTSD. Furthermore, fire fighters scored significantly higher ($M= 32.52$) on the symptoms of PTSD than other responders. The implications of these results for policies, provision of adequate paraphernalia to first responders and future research are highlighted and discussed.

Keywords: Posttraumatic stress disorder, First responders, Personality traits

1. Introduction

Nigeria in recent times have continuously experienced challenging tragic situations. From building collapse to bomb blasts, flood to fleeing refugees responding to insurgents' attacks, and a host of other catastrophic situations better known as disasters. These are not without accompanying devastating consequences. Disasters are traumatic events that are experienced by many people and may result in a wide range of mental and physical health consequences including Post-traumatic stress disorder. PTSD is a potentially debilitating Psychiatry condition. It refers to the disruptive impact that exposure to an extreme, threatening stressor can have on psychological and physiological functioning (Flannery, 1999). It can also develop following any traumatic, catastrophic life experience. Recognition of this condition increased dramatically following the war in Viet Nam, when many returning United States veterans developed disturbing Psychological symptoms and impaired functioning. In the wake of disasters in various forms, PTSD may result, leaving the victims in a dire need for help more than they would admit. With diagnosis made when symptoms persist for more than a month, the APA (2000) describes PTSD as characterized by three broad clusters of symptoms: re-experiencing the trauma; numbered responsiveness and avoidance of stimuli associated with the trauma; and persistent symptoms of increased autonomic and emotional arousal.

Usually, in post disaster situations, management and rehabilitation is focused on victims, victims by proxy such as close relations of victims and individuals around the scene of the event. Such post disaster management includes psychosocial interventions aimed at reducing the impact of the event on the victims and stabilizing them into normal functioning. However, little or no attention is given to the professionals who provide first response activities to ameliorate the impact of the event. Studies have revealed that reasons for this could among other things be that first responders are considered as super humans who can cope and adapt under extreme conditions. They are further perceived as immune to disaster impact, and viewed as those who are just "doing their jobs". This perception is not only costly, it is also deadly because of the ripple effect it could have on the well-being of all participants in disaster management activities.

The volume of literature on the impact of disaster situations on victims as compared to that on first responders in Nigeria indicates that research interests has always being among victims. The dearth of literature on prevalence and predictors of Post-traumatic stress disorder among first responders has therefore necessitated this study which particularly seeks to explore the role of personality traits and category of responder in predicting Post-traumatic stress disorder among First responders.

Exposure to threatening stressors such as human or natural disasters could portend a great susceptibility to PTSD among first responders. This unique population, because of the nature and description of their jobs, are routinely exposed to emergencies and situations that requires their expertise. Studies in other climes have shown that PTSD is a serious mental health concern among first responders. For example, in a study that focused on health trends of elevated PTSD risk in firefighters exposed to the world trade center disaster: 2001-2005 (Amy et al 2010), prevalence of PTSD among this category of first responder was reported to be 9.8% in the first year after 9/11, and in the 3 years, there was a steady rise and slow decline thus; 9.9%, 11.7% and 10.6% respectively. Similarly, in a study that examined the coping practices that fostered resilience among the officers of the New Orleans Police Department (NOPD) who served as first responders to the Katrina disaster (Terri et al, 2011), it was reported that the most cited coping strategy adapted by the responders was communication with other police officers. Coping was in relation to the stress they were exposed to in the course of providing relief and response.

Furthermore, in a systematic review on Post traumatic stress disorder following disasters, Neria, Nandi & Galia (2007) reviewed disaster studies between 1980 and 2007. They reported prevalence of PTSD among first responders who were assessed following involvement in rescue, recovery and cleaning efforts to be especially high. Specifically, they reported that 44.3% of police officers involved in the 1989 Hillsborough football stadium disaster in Sheffield, UK, assessed 1–2 years after exposure were classified with severe symptom severity while 44.1% were classified with moderate symptom severity.

First responders are “flesh and blood” first and everything else second. Habitually, we see the uniform and forget the person in the uniform, one who must not only bear witness, but be responsible for and engage with the trauma. Because their primary responsibility is to rescue and salvage lives and properties, they are repeatedly exposed to potentially traumatic situations which are also known as “critical incidents”, such as armed confrontations, motor vehicle crashes, and witnessing violent deaths (Charles et al 2006). Whether such traumatic situations are man-made or natural, there seem to be a common outcome; such frequent exposure places first responders at risk for developing posttraumatic stress disorder (PTSD) (Charles Marma, et.al, 2006). This could evoke adverse emotional reactions and affect their job performance, health, decision-making and family life (Sanford, 2003). Emergency responders must have the emotional resources to perform multiple tasks without losing control in the face of physical threats. The intricacy of their work requires them to exercise considerable skill, make delicate decisions with auspicious consequences, and solve a wide range of interpersonal problems, with no hard-and-fast rule about the correctness or incorrectness of solutions. (Fay, Kamena, Benner, Buscho, & Nagle, 2006). In this current study, First responders include fire-fighters, men and Officers of the police force, federal road safety corps and volunteers. This choice is due to convenience and availability of respondents.

Mowrer’s (1956) two-factor theory represents one of the first attempts to provide a behavioral explanation for the acquisition and maintenance of fear associated with PTSD (Cahill, Rothbaum, Resick, & Follette, 2009; Hembree & Foa, 2004). Mowrer suggested that emotions are learned through a two-part process that includes both classical and operant conditioning. Anticipatory fear is acquired through the process of classical conditioning, and relief from this fear takes place when the danger signal is terminated through active avoidance of the feared object or situation, thus creating a secondary reinforcement of the avoidance behaviour (i.e., operant conditioning) (Feather, 1963). In the classical conditioning model, unhealthy fear may develop when an otherwise neutral condition (e.g., being in an elevator) is associated with an unpleasant or dangerous outcome (e.g., an assault). In this case the person may find himself or herself reacting to the neutral condition with the same level of fear associated with the dangerous event. Furthermore, it is possible that through the process of generalization, the fear and avoidance may then expand to other places or situations that remind the individual of the trauma. These reminders or thoughts may trigger the same anticipatory fear response and engender the same avoidance behaviours associated with the original stimulus. Moreover, the avoidant behaviour becomes operantly conditioned as it provides the person with relief from the unpleasant experience of fear and anxiety.

Personality traits are traditionally conceptualized as dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions across developmental periods and contexts (McCrae & Costa 1992). The five-factor model of personality (FFM) (Costa & McCrae 1992) is the most popular structural personality model, confirmed across virtually all cultures and fairly stable over time (McCrae & Costa 2003). Furthermore, research suggests that the Big Five traits have a physiological and genetic basis and the heritability of its dimensions appears to be quite substantial (Bouchard & McGue 2003, O’zura et al. 2012). The dimensions composing the 5-factor model are Neuroticism, Extraversion, Agreeableness, Conscientiousness and Openness to Experience.

Neuroticism describes a tendency to react with strong emotion to adverse events. Individuals who are high on this dimension are more sensitive to stress because their responses are more rapid, more intense and slower to return to baseline. Conversely, those who are low on trait neuroticism find it easier to shake off stressful events. Extraversion is characterized by sociability, assertiveness, emotional expressiveness and excitability. People who are high on extraversion are often described as being outgoing and talkative, while, those low in this trait are described as quiet and reserved (Miller, 2003). Agreeableness is a tendency to be pleasant in social situation, conscientiousness includes traits like self-discipline, carefulness, thoroughness, self-organization and need for achievement, while openness to experience can be defined as the tendency to be interested in new situations, new ideas and new experiences.

Studies have revealed that personality traits play an important role in the development, outcome and formation of specific symptoms of PTSD (Fauerbach, Lawrence, Schmidt, Munster, & Costa., 2000; Cox, MacPherson, Enns, & McWilliams., 2004; and Wolf, Miller, Harrington, Reardon., 2012). In one of such studies by Talbert, Braswell, Albrecht, Hyer, Boudewyns (1993), they sorted Vietnam veterans into three groups based on trauma exposure level and found no significant difference among the personality profiles between them, but a normative profile was presented and it was characterized by an extremely high neuroticism score and an

extremely low agreeableness score. Again, in a cross-sectional study on persons with PTSD, Hyer, Braswell, Albrecht, Boyd, Boudewyns, and Talbert. (1994) found that only neuroticism was significantly associated with PTSD.

However, contrary to these findings, Knežević et al. (2005) conducted a longitudinal study on Yugoslavian students exposed to air attacks. While there was no significant correlation between personality traits and subsequent avoidance scores, openness to experience positively predicted intrusion scores 1 year after the attacks. Chung, Berger, Jones, Rudd., (2006) examined the association between five personality traits and PTSD symptoms among older people after myocardial infarction. Regression analyses showed that higher neuroticism predicted re-experiencing and avoidance symptoms, while higher neuroticism and less agreeableness predicted hyperarousal symptoms. Consistent with this finding is a study by Chung, Berger, Rudd, (2007) where they compared a no-PTSD group, a partial- PTSD group and a full-PTSD group of patients after myocardial infarction. Patients with full-PTSD were significantly more neurotic than those with no-PTSD and partial-PTSD. Patients with full-PTSD were less agreeable than patients with no-PTSD. Nevertheless, couple of studies established a link between low extraversion and PTSD outcomes (Fauerbach et al. 2000, Dörfel, Rabe, & Karl. 2008). These conflicting findings as to a prominent personality trait that predicts PTSD makes this study relevant.

Studies have indicated that rescue/recovery workers exposed to a major disaster have a higher risk for PTSD than the general population (Perrin, 2007) but a lower risk than survivors (North, Tivis, & McMillen 2002). However, there seem to be varied degrees of PTSD experience and prevalence among various categories of first responders. Ruy et al (2011) in their study among professional fire fighters asserted that one thing seems clear which is that fire fighters are at risk for experiencing stress and trauma, and that this risk often leads to the experience of PTSD symptoms. Whether or not stress has a cumulative impact, they posited that their results do suggest that the longer a person is a fire fighter the more likely they are to experience PTSD symptoms. Hence, the present study is an attempt to understand the roles of personality traits and categories of first responder in predicting PTSD among first responders in Ibadan, Oyo state, Nigeria.

2. METHOD

2.1 Design

This study adopted the ex-post-facto design. This is appropriate because the independent variables being considered already existed and hence do not require any form of manipulation. The independent variables are Personality traits (conscientiousness, agreeableness, neuroticism, openness to experience and extroversion), and Category of First Responders (Fire fighters, Policemen, Federal road safety corp, volunteers). The dependent variable is Post traumatic stress disorder.

The participants comprised 128 purposively selected respondents who had been exposed to or witnessed at least one disaster situation, either man-made, Natural or both. Eighty two (64.1%) were males, while 46 (35.9%) were females. The distribution along the line of first responder category is such that forty two (32.8%) were fire fighters, 21 (16.4%) were workers with the Federal road safety corps, 32 (25%) were from the Police force while the remaining 33 (25.8%) were Volunteers. One hundred and four (81.3%) were Christians, 22 (17.3%) were Muslims while 2 (1.6%) adhered to other faiths/beliefs. Their age ranged between 19 and 65, with a mean of 31.23 years \pm 14.56. Their educational background also varied; 28 (21.9%) obtained a University second degree, 46 (35.9%) had either a University first degree or a higher national diploma. Twenty seven (21.1%) had National diploma or equivalent certificate while 27 (21.1%) had senior secondary certificate. With respect to the number of times of exposure to disaster, thirty two (25.0%) reported to have been exposed only once, 30 (23.4%) had been exposed only twice, 33 (25.8%) had been exposed three times only, while 33 (25.8%) had been exposed more than three times.

2.2 Measure

A 44-item structured self report questionnaire divided into Sections A to D was used to collect data. Section A contains 8 items seeking information on participants' bio-data.

Section B contained a kit for diagnosing PTSD. It is an addendum to the Impact of Event Scale-Revised developed by Weiss and Marmar, (1997). It consists of four questions that seek to determine whether or not the respondents have been exposed to a traumatic event. It is called the rapid diagnosis toolkit which is based on criteria A1 and A2 of the DSM-IV definition, of a traumatic event. Some questions asked in this section include: 'have you ever been subjected to, witness to or been directly involved in one or more events that posed a serious physical threat to you or someone else?'. 'which of the following responses best reflect your reaction to the event'. Only respondents who answered in the affirmative to the questions were eligible to participate.

Section C consist of 22-items Impact of Event scale Revised (IES-R). The IES-R is a revised version of the Impact of event scale originally developed by Horowitz (1982). This revised version was developed by Weiss and Marmar, (1997). The IES-R has a 5 point response format ranging from 0 (not at all) to 4 (extremely). It is a self-report measure of current subjective distress in response to a specific traumatic event. The 22-item

scale is comprised of 3 subscales representative of the major symptoms clusters of post-traumatic stress: intrusion (8 items), avoidance (8 items), and hypervigilance (6 items). Sample items on each subscale include: intrusion subscale: ‘any reminder brought back feelings about it’, avoidance subscale: ‘I avoided letting myself get upset when I thought about it or was reminded of it’, hypervigilance subscale: ‘I felt irritable and angry’. The test retest reliability for the IES-R ranges from 0.89 to 0.94, and cronbach alpha for each subscale (intrusion=0.84 to 0.97, avoidance=0.84 to 0.97, and hypervigilance=0.97 to 0.91) shows an acceptable reliability. A revalidation of the scale yielded an alpha co-efficient of 0.88 as the composite reliability. Item total correlation was also carried out to determine the validity of each item. An IES-R score between 1-11 indicates that a respondent presents little or no symptom of post-traumatic stress, hence no action is required. Scores between 12-32 shows that a respondent presents several symptoms of post-traumatic stress that requires monitoring. An IES-R score that is equal to or greater than 33 shows that the respondent has posttraumatic stress disorder and would require intervention.

Section D contained a 10-item personality scale. Personality characteristics (neuroticism, extroversion, openness, agreeableness and conscientiousness) were measured with the big five personality scale (10 items version) by Oliver and Rammstedt (2006). The scale has 10 items rated on five Likert response format ranging from 1=strongly disagree to 5=strongly agree. Item 1 and 6 measures extraversion, 2 and 7 measures agreeableness, 3 and 4 measures conscientiousness, 5 and 10 measures openness to experience, while 8 and 9 measures neuroticism. The cronbach alpha of .86 was reported by the author. For this study, an alpha co-efficient of 0.57 was established for this scale.

2.3 Procedures

First responders within the city of Ibadan; who had been exposed to at least one form of disaster or the other were targeted. To ensure that the participant has actually been exposed to at least a disaster situation over the past month, a rapid diagnostic kit attached to the impact of event scale-revised was administered on participants. The kit consists of four questions that seek to determine whether or not the respondents have been exposed to a traumatic event. It is based on criteria A1 and A2 of the DSM-IV definition of a traumatic event. Sample items include ‘have you ever been subjected to, witness to or been directly involved in one or more events that posed a serious physical threat to you or someone else?’. ‘which of the following responses best reflect your reaction to the event’. Only respondents who answered in the affirmative to the questions that were eligible to participate. Therefore, although 150 questionnaire were originally distributed, it was finally reduced to 128 due to the inability to meet with the criteria in the screening tool. The questionnaire was administered on participants individually at the work place after due permission was granted by the authority in place and having obtained their informed consent.

2.4 Results

Table 1 reveals a significant joint influence of the big five personality traits (Openness to experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) on PTSD ($F(5,112)=3.65$; $p<.01$). The multiple R obtained was 0.40 with R^2 of 0.16. This implies that the predictor variables co-jointly account for about 16% on PTSD. Further results showed that Neuroticism independently predicted PTSD significantly ($\beta=0.19$; $t=2.06$; $p<.05$). This means that Neuroticism accounts for a beta value of 19% on PTSD. The positive sign indicates that as neuroticism increases, so also do PTSD. It implies that emotional instability is a significant predictor of PTSD among first responders

Table 1: Summary of multiple regression test showing the joint and independent influences of Personality traits on PTSD

Independent Variables	β	t	sig	R	df	R^2	F	p
Extraversion	-.10	-1.12	>.05					
Agreeableness	0.19	1.55	>.05					
Conscientiousness	-0.15	-1.37	>.05	0.40	5	0.16	3.65	<.01
Neuroticism	0.19	2.06	<.05					
Openness	-.04	-0.42	>.05					

Table 2: Summary of One Way ANOVA showing difference among Categories of first responders on PTSD

Source of Variation	SS	df	MS	F	p
Between	1660.5	3	553.51	2.607	<.05
Within	26331.88	124	212.35		
Total		127			

*P<.05

Results from table 2 revealed a significant main influence of categories of responders on PTSD (F(3,124)=2.61; p<.05). Further statistics to establish the mean differences and significance was carried out using the scheffe multiple comparison tool. Results are presented in table 3.

Table 3: Summary table of scheffe multiple comparison showing the mean differences among Fire fighters, Police officers, FRSC workers and Volunteers on PTSD

Variables	1	2	3	4	M	SD	N
Fire Fighters	-				32.52	13.40	42
FRSC	-.27	-			32.24	14.51	21
Police force	7.11*	6.83	-		25.41	12.00	32
Volunteers	7.46*	7.17	0.35	-	25.06	17.92	33

*P<.05. FRSC: Federal Road Safety Corps.

As shown in table 3, the mean PTSD score of fire-fighters is higher than other first responders, which implies that there is a significant difference between fire fighters and other first responders based on their average score on PTSD (fire-fighters: X=32.52; Police force: X=25.41; p<.05, Volunteers: X=7.46; p<.05). It further implies that fire fighters experience more symptoms of PTSD in comparison to other first responders.

2.5 Discussion

A very significant finding from this study is that personality traits predicts PTSD symptoms among first responders. This highlights the importance of individual differences as a risk factor in PTSD and ridicules the idea that first responders could be “super human” who are immune to the adverse effects of disaster; whether human made or natural. It was particularly reported that of the five dimensions of personality identified in this study, only neuroticism significantly predicts PTSD. This finding is consistent with Chung, Berger, Jones, & Rudd (2006), who reported in their study among patients with myocardia infarction that higher neuroticism predicted re-experiencing and avoidance symptoms. This implies that emotionality which aptly captures neuroticism on the part of first responders is germane as far as PTSD is concern. A positive association was identified which means that as a first responder becomes more emotional, there will be a high likelihood for such to elicit PTSD symptoms in the face of adverse life events or disaster situations. This finding has implication for teaching emotional intelligence. Emotional intelligence is a person’s ability to recognize personal feelings and those of others, to also manage emotions within themselves and in their relationships with others. An individual who is high on neuroticism is expected to be low on emotional intelligence and such person in the case of a first responder cannot provide adequate response service in the face of emergencies or disaster situations. Authorities and policy makers in the domain of disaster management and the national emergency management agency (NEMA) should draw up appropriate programs to teach emotional intelligence on their personnel thus reducing the risk of PTSD.

Another significant outcome from this study is on a particular category of first responder and how it associates with PTSD. Firefighters differed significantly from other first responders in this study. They scored higher on PTSD than other responders. Ruy et al (2011) in their study among professional fire fighters asserted that one thing seems clear which is that fire fighters are at risk for experiencing stress and trauma, and that this risk often leads to the experience of PTSD symptoms This brings more to the fore. It raises more questions than answers. What is peculiar about firefighting? What duties distinguish them from other responders? The simple answers to these is that further studies need to be carried out to ascertain why this may be so especially in this part of the world. From interactions with some fire fighters who participated in this study, it was discovered that firefighters in this study do not fight only fires; they fight other terrible scenes and disaster situations that sometimes could be worse than fire. For example, some fire fighters have been exposed to terrorism attacks typified in bomb blasts, picking body parts, rescuing persons from water wells amongst others. This shows that the level of exposure to disaster for firefighters is more than that of other first responders. This could have explained for the high score on PTSD. This finding has implication for training during recruitment. Training for firefighters should not be limited to fires alone, other disaster situations should be incorporated in training as it creates a readiness and alertness required to combat emergency cum disaster situations. With a larger scope in

training comes a greater need for more adequate paraphernalia for firefighters. Any responsible government would adequately equip its firefighters so that they can effectively combat emergencies, seeing that they are needed in almost every emergency situations, unlike other responders considered in this study. The neglect of this responsibility could portend a great danger in the immediate and for posterity.

PTSD can be reduced among first responders. Proactive steps on the part of appropriate quarters in emergency management need to be taken as highlighted above. Like the victims, first responders also need to be understood and cared for. Its only in doing this that rescue activities can be useful and productive. There is therefore an urgent need for psychological programs and intervention to help better the lots of first responders.

References

- American Psychiatric Association (2000), *Diagnostic and Statistical Manual of Mental Disorder*. Fourth Edition. Washington DC: American Psychiatric Association.
- Amy, B., Mayris, P., Webber, Hillel W. C., Jackson, G., Roy, L., Justin, K. N., Sydney, C., Rachel, Z., Jackie, S., Kerry, K., David, J. P. (2010). Trends of elevated PTSD risk in Firefighters exposed to the World trade center disaster: 2001-2005. *Public Health Reports*, Vol. 125, 4, pp. 556-566. Published by: Association of Schools of Public Health Stable URL: <http://www.jstor.org/stable/41435281>. Accessed: 19/07/2014 09:49
- Bouchard, T. J., & McGue, M. (2003). Genetic and environmental influences on human Psychological differences, *Journal of Neurobiology*. 54:4-45.
- Cahill, S. P., Rothbaum, B. O., Resick, P. A., & Follette, V. M. (2009). Cognitive-behavioral therapy for adults. In E. B. Foa, T. M. Keane, M. J. Friedman, & J. A. Cohen (Eds.), *The effective treatment for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies* (pp. 139–222). New York: Guilford.
- Charles, R. M., Shannon, E. M., Thomas J. M., Suzanne, B., Daniel, S. W., Jeffery, F., Akiva, L., Nnamdi, P., Christian, O., Rachel, Y., David, M. & Thomas, N., (2006). Predictors of Posttraumatic Stress in Police and Other First Responders. *New York Academy of Sciences*, 1071: 1–18.
- Chung, M. C., Berger, Z. & Rudd, H. (2007). Comorbidity and personality traits in patients with different levels of posttraumatic stress disorder following myocardial infarction. *Psychiatry Res* 2007; 152:243–52.
- Chung, M. C., Berger, Z., Jones, R. & Rudd, H. (2006). Posttraumatic stress disorder and general health problems following myocardial infarction (Post-MI PTSD) among older patients: The role of personality. *International Journal of Geriatric Psychiatry*; 21:1163–1174.
- Costa, P. T., & McCrae, R. R. (1992). The five-factor model of Personality and its relevance to Personality disorders, *Personality Disorder*, 6:360–371.
- Cox, B. J., MacPherson, P. S., Enns, M. W. & McWilliams, L. A. (2004). Neuroticism and self-criticism associated with posttraumatic stress disorder in a nationally representative sample. *Journal of Behaviour Response Therapy*; 4:105–114.
- Dörfel, D., Rabe, S. & Karl, A. (2008). Coping Strategies in Daily Life as Protective and Risk Factors for Post Traumatic Stress in Motor Vehicle Accident Survivors. *Journal of Loss and Trauma*. 13:422-40.
- Fauerbach, J. A., Lawrence, J. W., Schmidt, C. W., Munster, A. M. & Costa, P. T. (2000) Personality predictors of injury-related posttraumatic stress disorder. *Journal of Nervous Mental Disorder*; 188:510–517.
- Fay, J., Kamena, M. D., Benner, A., Buscho, A., & Nagle, D. (2006). Emergency Responder Exhaustion Syndrome (ERES): A perspective on stress, coping and treatment in the emergency responder milieu.
- Feather, N. T. (1963). Mowrer's revised two-factor theory and the motive-expectancy-value model. *Psychological Review*, 70, 500–515.
- Flannery, R. B. (1999). Critical incident stress management and the assaulted staff action program. *International Journal of Emergency Mental Health*, 2, 103-108.
- Hembree, E. A., & Foa, E. B. (2004). Promoting cognitive change in posttraumatic stress disorder. In M. A. Reinecke & D. A. Clark (Eds.), *Cognitive therapy across the lifespan: Evidence and practice* (pp. 231–257). New York: Cambridge University Press.
- Hyer, L., Braswell, L., Albrecht, B., Boyd, S., Boudewyns, P. & Talbert, S. (1994) Relationship of NEO-PI to personality styles and severity of trauma in chronic PTSD victims. *Journal of Clinical Psychology*. 59:1295–1304.
- Knežević, G., Opačić, G., Savić, D. & Priebe, S. (2005). Do personality traits predict post-traumatic stress?: a prospective study in civilians experiencing air attacks, *Psychological Medicine*; 35:659–663.
- Miller, M. W. (2003). Personality and the etiology and expression of PTSD: a three-factor model perspective. *Clinical Psychology: Science and Practice*. 10:373–393.
- Mowrer, O. H. (1956). Two-factor learning theory reconsidered, with special reference to Secondary reinforcement and the concept of habit. *Psychological Review*, 63, 114–128.
- Nenad, J., Lovorka, B., Ena, I., Radmila, T. & Miro, J. (2012). The role of Personality traits in Posttraumatic

- Stress disorder (PTSD). *Psychiatria Danubina*. pp 256–266.
- Neria, Y., Nandi, A., & Galea, S. (2007). Post-traumatic stress disorder following disasters: a systematic review. *Psychological Medicine*, Page 1 of 14. Cambridge University Press doi:10.1017/S0033291707001353.
- North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Cox, J., Spitznagel, E. L., Bunch, K., Schorr, J. & Smith, E. M. (2002). 'Coping, Functioning, and Adjustment of Rescue Workers After the Oklahoma City Bombing'. *Journal of Traumatic Stress*, Vol. 15, No. 3, 171-175.
- Perrin, M. A., DiGrande, L., Wheeler, K., Thorpe, L., Farfel, N. & Brackbill, R. (2007). Differences in PTSD Prevalence and Associated Risk Factors among World Trade Center Disaster Rescue and Recovery Workers'. *American Journal of Psychiatry*, 164:9, 1385-1394.
- Rudy, N., Liesl, N., & Frank, B. (2011). Post-Traumatic Stress Disorder and Coping Among Career Professional Fire-fighters. *American Journal of Health Sciences – Spring, Volume 2, Number 1*
- Talbert, F. S., Braswell, L. C., Albrecht, J. W., Hyer, L. A. & Boudewyns, P. A. (1993). NEO-PI profiles in PTSD as a function of trauma level. *Journal of Clinical Psychology*; 49:663-9.
- Terri, A., Leigh, A., Milanika, T., & Jonathan, A. (2011). Coping through a Disaster: Lessons from Hurricane Katrina. *Journal of Homeland Security and Emergency Management*, Volume 8, Issue 1 Article 19.
- Wolf, E. J., Miller, M. W., Harrington, K. M. & Reardon, A. (2012). Personality-based latent classes of p posttraumatic psychopathology: personality disorders and the internalizing/externalizing model. *Journal of Abnormal Psychology*. 121:256-62.