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PERSONALITY AND THE DEVELOPMENT AND EXPRESSION OF PTSD

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Advances in the study of personality have stimulated renewed interest in the interface between personality and PTSD. Behavioral genetics and longitudinal developmental studies have produced compelling evidence for the heritability and stability of trait dispositions assessed by personality inventories. Remarkable progress has also been made in the conceptualization and measurement of personality, allowing demonstration of its links to affective dispositions, structural and biochemical systems in the brain, and role in the etiology of psychopathology. Application of these developments to the study of PTSD has the potential to advance the understanding of one of the trauma field's most intriguing questions—why some individuals exposed to trauma develop significant psychopathology, while others do not. Research on the interface of personality and PTSD may also contribute to understanding factors that determine the course, behavioral expression, and patterns of comorbidity associated with the disorder.

The Three-Factor Model of Personality and its Relation to Psychopathology. Personality traits are generally conceptualized as consistent patterns of thoughts, feelings, and actions across developmental periods and contexts, but personality models differ widely with regard to the factor structure, number, and definition of these traits. This review will focus on three broad dimensions, or higher-order factors, that are particularly relevant to the development and expression of psychopathology: positive emotionality (PEM), negative emotionality (NEM), and constraint (CON). Drawing from Tellegen's three-factor model (1985, in press), PEM is used here to refer to individual differences in the capacity to experience positive emotions and tendencies towards active involvement in the social and work environments. It is aligned closely with extraversion, includes traits associated with perceived wellbeing, social closeness, social potency, and achievement orientation, and it is linked conceptually to the neurobiological system underlying appetitive-approach behavior. NEM, on the other hand, has an orthogonal relationship to PEM and refers to dispositions toward negative mood and emotion and a tendency towards adversarial interactions with others. It is synonymous with neuroti-

cism, subsuming traits relating to anxiety (i.e., stress reaction), alienation, and aggression, and is thought to be linked to functioning of the neurobiological system underlying defensive behavior. CON is an impulsivity dimension involving trait dispositions anchored by planfulness vs. spontaneity, harm-avoidance vs. risk-taking, and traditionalism vs. non-conformity, and it reflects functioning of brain regulatory systems governing behavioral restraint. Support for the validity of these high-order personality dimensions comes from various sources including research showing that they correspond closely to dimensions of temperament identified in studies on infancy and early childhood, behavior genetics studies showing them to have substantial heritabilities, and evidence that scales measuring these constructs exhibit long-term stability in adulthood.

Research Implicating High NEM as a Risk Factor for PTSD. Prospective longitudinal studies featuring assessments conducted pre- and post-trauma are the method of choice for examining the influence of personality on the development of PTSD because

Iraq War Clinician Guide

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Developed by members of the National Center for PTSD and the Department of Defense, the *Guide* is designed specifically for clinicians and addresses the unique needs of veterans of the Iraq war.

they permit examination of whether personality traits existed differentially between individuals with and without PTSD prior to trauma exposure. Studies of this type have revealed significant associations between pre-trauma NEM and the subsequent development of PTSD (Lee et al., 1995; Schnurr et al., 1993). For example, O'Toole et al. (1998) examined the military records of Vietnam veterans and found that those who developed combat-related PTSD scored higher on a measure of NEM administered at enlistment than those who never developed the disorder. Similarly, Bramsen et al. (2000) assessed soldiers pre- and post-deployment for a peacekeeping operation and found that pre-deployment NEM predicted PTSD severity. This relationship held even after statistically controlling

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for the severity of peacekeeping stressors, demographic variables, and other pre-morbid personality characteristics.

Other studies have used prospective designs in which trauma-exposed individuals are assessed shortly after a traumatic event and then followed longitudinally to identify factors that affect the course of posttraumatic adjustment, e.g. Carlier et al., 1997, Fauerbach et al., 2000, and Holeva & Tarrier et al., 2001. Many of these also point to the key role of NEM in the etiology of PTSD. For example, Bennett et al., 2002, studied myocardial infarction patients and found that NEM at the time of hospitalization predicted the severity of PTSD symptoms three months later. Similarly, McFarlane (1992) found that NEM predicted the progression of PTSD from intrusive symptoms in the acute aftermath of trauma to chronic disorder over three years later. Similar findings have been observed in dozens of cross-sectional studies of trauma survivors. For example, Breslau et al. (1991), Cox et al. (2004), and Van Zelst (2003) have shown that among individuals exposed to trauma, NEM is a significant predictor of PTSD even after controlling for a range of other important risk factors such as gender, early parental separation, preexisting anxiety/depression, and parental mental disorder.

These and other studies recently reviewed in more depth elsewhere (Miller, 2003; Schnurr & Vielhauer, 1999) support the conclusion that high NEM is the primary personality risk factor for PTSD following trauma exposure. This is consistent with a broader literature showing that NEM is a non-specific predictor of a broad class of psychopathology referred to variously as the "internalizing disorders" (Krueger et al., 2001) or "distress disorders" (Clark et al., 1994). Under this hypothesis, NEM may represent a generalized biological vulnerability to anxiety and its disorders, rather than a PTSD-specific risk factor.

The existing literature suggests also that NEM and other dimensions of personality may be altered as a consequence of trauma exposure. This proposition is based on cross-sectional studies showing that the personality profiles of individuals with PTSD deviate from community norms or control groups in psychopathological directions, evidence that scores on personality measures covary with the onset and remission of other Axis I conditions, and results of taxometric investigations characterizing PTSD as a dimensional disorder reflecting the upper end of a stress-response (i.e., NEM) continuum, rather than a discrete clinical syndrome or taxon. This is not to suggest that PTSD is equivalent to, or synonymous with, the extreme manifestation of NEM, for the diagnostic criteria for PTSD clearly include a number of specific symptoms that are not subsumed within the NEM construct (e.g., hyperreactivity to trauma-specific stimuli and avoidance of such stimuli). Nonetheless, many of the characteristics evident in individuals with PTSD can be conceptualized from a dimensional perspective and overlap with NEM (Engelhard, 2003). In particular, high NEM and PTSD both involve tendencies to feel nervous, tense, sensitive, vulnerable, betrayed, mistreated, unlucky, etc.

The Three-Factor Model and a Personality-Based Taxonomy of Posttraumatic Response. The existing literature on the relationship between personality and PTSD suggests that NEM is both a risk factor for PTSD and a dimension of personality that is altered as a consequence of trauma exposure. But what role, if any, might PEM and CON play in the development and expression of PTSD? Miller (2003) hypothesized that these independent dimensions of personality serve primarily as moderating factors that influence the form and expression of posttraumatic responses through their interaction with NEM. From this standpoint, individuals characterized prior to trauma by both high NEM and low PEM should show a propensity towards a form of posttraumatic adjustment characterized by marked depressive symptomatology and social avoidance. Moreover, given evidence for the covariation of NEM, the Axis I anxiety and depressive disorders, and the cluster C subgroup of personality disorders characterized in DSM-IV as "anxious-fearful," these individuals would also be expected to show higher rates of comorbid avoidant, dependent, or obsessive-compulsive personality disorder diagnoses. In contrast, premorbid high NEM combined with low CON would be associated with a proclivity towards impulsivity, aggression, antisociality, and substance abuse. These individuals would be expected to show higher rates of cluster B personality disorder features (i.e., the "dramatic-emotional" disorders—antisocial, borderline, histrionic, and narcissistic) that are characterized by impulsive/sensation-seeking behavior combined with labile emotionality.

These hypotheses are supported by research on the structure of childhood and adult psychopathology showing that patterns of behavioral disturbance and psychiatric comorbidity cohere along latent dimensions of psychopathology termed externalization and internalization (Krueger et al., 2001). Evidence shows that an internalizing factor may account for patterns of comorbidity between the unipolar depressive and anxiety disorders, while an externalizing factor accounts for patterns of comorbidity in substance-related disorders and antisocial personality disorder. Moreover, evidence suggests that high NEM combined with low PEM represents the personality substrate for internalizing, while high NEM combined with low CON underlies the externalizing disorders.

Recent work has shown these constructs to be important to the understanding of posttraumatic stress responses as well. Specifically, through a series of ongoing and published cluster analytic studies of personality inventories completed by trauma survivors, we have observed, and replicated in both male and female samples, evidence of internalizing and externalizing subtypes of post-traumatic response (Miller et al., 2003; Miller et al., in press). Internalizers were characterized by high rates of comorbid major depression and panic disorder, schizoid and avoidance personality disorder features, and personality profiles defined by high NEM combined with low PEM. Externalizers, in contrast, were characterized by heightened anger and aggression, substance-related disorders,

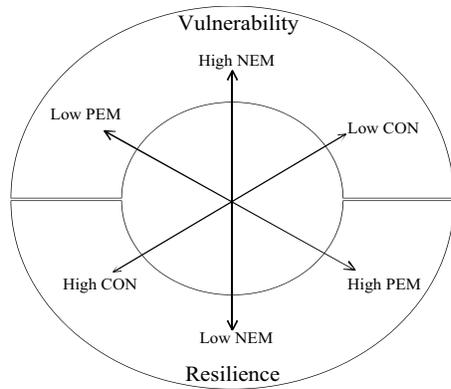


Figure 1. Relations between dimensions of personality and resilience and vulnerability to PTSD. NEM = Negative Emotionality; PEM = Positive Emotionality; CON = Constraint.

cluster B personality disorder features, and personality profiles defined by high NEM combined with low CON. These findings underscore the considerable variability in post-traumatic responses within a particular trauma population. They suggest that a personality-based internalizing/externalizing typology of PTSD may be a useful heuristic for advancing the understanding, individual differences in the response to traumatic stress, the structure of post-traumatic psychopathology, and mechanisms underlying patterns of PTSD comorbidity.

A fundamental assumption of work in this area is that the personality dimensions under consideration are bipolar. One implication of this that deserves greater attention in future research is that the polar opposites of personality characteristics implicated in post-traumatic psychopathology (i.e., high PEM, low NEM, high CON) may represent trauma resilience factors. Low NEM, for example, is associated with emotional stability, the absence of nervousness and anxiety, and the capacity to remain calm in stressful situations and to recover quickly from negative experiences. When these characteristics are combined with sociability, the tendency to take pleasure in and value close

interpersonal ties, and the capacity to be warm and affectionate and to turn to others for comfort and help in time of need (i.e., high PEM), the profile that emerges is that of a personality resilient to stress, loss, adversity, trauma, and the development of psychopathology.

Figure 1 illustrates hypothesized relations between higher-order dimensions of personality and reflects how they might combine to produce resilience and vulnerability to PTSD following trauma exposure. The orthogonal dimensions PEM, NEM, and CON form the foundation of the model, the midpoint of each located in the center of the figure. Characteristics hypothesized to be vulnerability factors are located in the top (i.e., high NEM) half of the figure; resilience is in the polar opposite (i.e., low NEM) half.

Figure 2 illustrates the hypothesized structure of PTSD comorbidity and shows the relation of each personality factor to the internalizing and externalizing dimensions of psychopathology. The latter are conceptualized as obliquely-related, core psychopathological processes that influence the form and expression of posttraumatic distress. To illustrate this, hypothesized relations between these constructs and select Axis I and II disorders that co-occur frequently with PTSD are shown. The prototypic disorder associated with the externalizing dimension is antisocial personality disorder. Borderline personality disorder, the substance- and alcohol-use disorders, and bulimia are also located in this spectrum. Panic disorder, generalized anxiety disorder, and major depressive disorder are hypothesized to fall in the internalizing spectrum along with schizoid and avoidant personality disorder.

This model has potential to link our understanding of the psychopathology of PTSD with research on the structure and organization of common mental disorders more broadly. It offers a dimensional framework for understanding individual differences in post-traumatic adjustment, including patterns of comorbidity and their relationship to personality, and it is consonant with the movement towards a dimensional nosology for DSM-V. It is hoped that this model will help to advance theoretical conceptualizations of the person-trauma interaction, the conceptualization of heterogeneity in posttraumatic responses, and the relationship of PTSD to related forms of psychopathology. Finally, research in this area holds promise for the development of assessment and treatment techniques that systematically address individual differences in clinical presentation among trauma survivors and target core psychopathological (i.e., internalizing and externalizing) processes that account for the co-occurrence of disorders within broad classes of psychopathology.

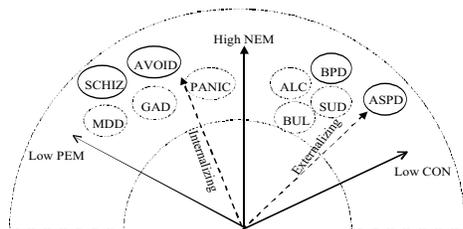


Figure 2. Hypothesized structure of PTSD comorbidity and the relation of disorder to internalizing and externalizing dimensions of psychopathology. Axis I disorders are designated in circles with dotted lines, Axis II disorders are in circles with solid lines. ALC = alcohol-related disorders; ASPD = antisocial personality disorder; AVOID = avoidant personality disorder; BPD = borderline personality disorder; BUL = bulimia; MDD = major depressive disorder; GAD = generalized anxiety disorder; PANIC = panic disorder; SCHIZ = schizoid personality disorder; SUD = substance-related disorder.



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- CLARK, L.A., WATSON, D., & MINEKA, S. (1994). **Temperament, personality, and the mood and anxiety disorders.** *Journal of Abnormal Psychology, 103*, 103-116.
- KRUEGER, R.F., MCGUE, M., & IACONO, W.G. (2001). **The higher-order structure of common DSM mental disorders: Internalization, externalization, and their connections to personality.** *Personality and Individual Differences, 30*, 1245-1259.
- TELLEGEN, A. (1985). **Structures of mood and personality and their relevance to assessing anxiety, with an emphasis on self-report.** In A.H. Tuma & J.D. Maser (Eds.), *Anxiety and the anxiety disorders* (pp. 681-706). Hillsdale, NJ: Erlbaum.
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SELECTED ABSTRACTS

- BENNETT, P., OWEN, R.L., KOUTSAKIS, S., & BISSON, J. (2002). **Personality, social context and cognitive predictors of post-traumatic stress disorder in myocardial infarction patients.** *Psychology and Health, 17*, 489-500. The study investigated the relationship between two personality factors (alexithymia and negative affect), social support, the immediate cognitive and emotional response (importance, degree of emotional response, dissociation, fear) to a myocardial infarction, and the frequency of PTSD symptoms three months following a myocardial infarction (MI). 75 of 89 consecutive hospital admissions completed questionnaires both in hospital and three months subsequently. The study found a PTSD prevalence rate of 16 percent three months following MI. There was a moderate reduction of intrusive memories of the MI and anxiety symptoms over time and a non-significant reduction in avoidance phenomena. Depressive symptoms did not reduce over time. Significant associations were found between PTSD symptoms at three months and initial intrusion and avoidance symptoms, negative affect, absence of confidant support, dissociation, fright, and surprise. The percentage of the variance in post-traumatic symptomatology explained by the theoretical constructs of interest was modest (total adjusted R-squared between 0.392 and 0.658 depending on the measure of PTSD symptoms), but sufficient to warrant their inclusion in a predictive model of PTSD symptoms.
- BRAMSEN, I., DIRKZWAGER, A.J.E., & VAN DER PLOEG, H.M. (2000). **Predeployment personality traits and exposure to trauma as predictors of posttraumatic stress symptoms: A prospective study of former peacekeepers.** *American Journal of Psychiatry, 157*, 1115-1119. *Objective:* The authors' goal was to study the contribution of predeployment personality traits and exposure to traumatic events during deployment to the development of symptoms of PTSD in individuals involved in military peacekeeping activities. *Method:* 572 male veterans who participated in the United Nations Protection Force mission in the former Yugoslavia completed a short form of the Dutch MMPI before deployment. Following deployment, they participated in a survey of all Dutch military veterans who had been deployed in the years 1990-1995 and completed the Self-Rating Inventory for PTSD. *Results:* Exposure to traumatic events during deployment had the highest unique contribution to the prediction of PTSD symptom severity, followed by the personality traits of negativism and psychopathology, followed by age. *Conclusions:* Both pretrauma vulnerabilities and exposure to traumatic events were found to be important factors in the etiology of posttraumatic stress symptoms. The current study replicates in a non-American sample of peacekeepers findings obtained among American Vietnam veterans. Particularly, there is accumulating evidence for an etiological role of the personality trait of psychoneuroticism in the development of posttraumatic stress symptoms.
- BRESLAU, N., DAVIS, G.C., ANDRESKI, P., & PETERSON, E. (1991). **Traumatic events and posttraumatic stress disorder in an urban population of young adults.** *Archives of General Psychiatry, 48*, 216-222. To ascertain the prevalence of PTSD and risk factors associated with it, we studied a random sample of 1007 young adults from a large health maintenance organization in the Detroit, Michigan area. The lifetime prevalence of exposure to traumatic events was 39.1%. The rate of PTSD in those who were exposed was 23.6%, yielding a lifetime prevalence in the sample of 9.2%. Persons with PTSD were at increased risk for other psychiatric disorders; PTSD had stronger associations with anxiety and affective disorders than with substance abuse or dependence. Risk factors for exposure to traumatic events included low education, male sex, early conduct problems, extraversion, and family history of psychiatric disorder or substance problems. Risk factors for PTSD following exposure included early separation from parents, neuroticism, preexisting anxiety or depression, and family history of anxiety. Life-style differences associated with differential exposure to situations that have a high risk for traumatic events and personal predispositions to the PTSD effects of traumatic events might be responsible for a substantial part of PTSD in this population.
- CARLIER, I.V.E., LAMBERTS, R.D., & GERSONS, B.P.R. (1997). **Risk factors for posttraumatic stress symptomatology in police officers: A prospective analysis.** *Journal of Nervous and Mental Disease, 185*, 498-506. This study examines internal and external risk factors for posttraumatic stress symptoms in 262 traumatized police officers. Results show that 7% of the entire sample had PTSD, as established by means of a structured interview; 34% had posttraumatic stress symptoms or subthreshold PTSD. Trauma severity was the only predictor of posttraumatic stress symptoms identified at both 3 and 12 months posttrauma. At 3 months posttrauma, symptomatology was further predicted by introversion, difficulty in expressing feelings, emotional exhaustion at time of trauma, insufficient time allowed by employer for coming to terms with the trauma, dissatisfaction with organizational support, and insecure job future. At 12 months posttrauma, posttraumatic stress symptoms were further predicted by lack of hobbies, acute hyperarousal, subsequent traumatic events, job dissatisfaction, brooding over work, and lack of social interaction support in the private sphere. Implications of the findings regarding organizational risk factors are discussed in the light of possible occupational health interventions.
- COX, B.J., MACPHERSON, P.S.R., ENNS, M.W., & MCWILLIAMS, L.A. (2004). **Neuroticism and self-criticism associated with posttraumatic stress disorder in a nationally representative sample.** *Behaviour Research and Therapy, 42*, 105-114. Broad and specific psychological traits may uniquely differ-

entiate trauma victims with PTSD from trauma victims without PTSD, but there is a need for representative, population-based research. We investigated elevated neuroticism and self-criticism in association with the presence versus absence of PTSD in a nationally representative sample of adults who experienced a traumatic stressor. Respondents were from the National Comorbidity Survey Part II ($N=5877$). Individuals who experienced one or more traumatic events were selected ($N=3238$). In separate regression analyses, elevated levels of neuroticism and self-criticism were each significantly associated with PTSD among men and women who had experienced one or more traumatic events. After controlling for types of traumas experienced and other previously identified factors, neuroticism remained significantly associated with PTSD in women and both neuroticism and self-criticism remained significant in men. Evidence from this nationally representative sample of adults who experienced traumatic events suggests that self-criticism and especially the broad personality domain of neuroticism may represent robust psychological dimensions associated with the presence of PTSD.

ENGELHARD, I.M., VAN DEN HOUT, M.A., & KINDT, M. (2003). **The relationship between neuroticism, pre-traumatic stress, and post-traumatic stress: A prospective study.** *Personality and Individual Differences*, 35, 381-388. The personality trait of neuroticism has been repeatedly associated with symptoms of PTSD. However, the nature of this relationship is unclear. There are at least two possible interpretations: neuroticism might be a risk factor for PTSD symptoms, or, alternatively, the relationship might be based on content overlap in arousal symptoms. With a prospective design, this study tested both possibilities. About 1370 women volunteers completed questionnaires early in pregnancy, measuring neuroticism and 'baseline' arousal symptoms, and for every 2 months thereafter until 1 month after the due date of birth. Of these, 126 had a pregnancy loss, and most of them were assessed for PTSD symptoms 1 month later. The results showed that pre-trauma neuroticism strongly predicted PTSD symptoms, and particularly PTSD arousal symptoms, after pregnancy loss. However, neuroticism was also strongly related to pre-trauma arousal. After statistically controlling for pre-trauma arousal symptoms, the relationship between neuroticism and PTSD symptoms after pregnancy loss was no longer significant. In other words, neuroticism did not predict rises in these symptoms from pre to post-trauma. This suggests that PTSD arousal symptoms tap a specific aspect of neuroticism, and that content-overlap largely accounts for the relationship between neuroticism and PTSD symptoms.

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 and Mental Disease*, 188, 510-517. This longitudinal, cohort study examined the effect of personality traits on the emergence of PTSD in a recently traumatized, civilian, mixed-gender sample with significant injuries. Burn survivors ($N = 70$) were administered the NEO-Personality Inventory (NEO-PI) and the Structured Clinical Interview for DSM III-R (SCID) at hospital discharge and readministered the SCID 4 and 12 months later. Overall, the sample of burn survivors scored significantly higher on neuroticism and extraversion and lower on openness, agreeableness, and conscientiousness relative to a normative national sample. Furthermore, multivariate analysis of variance revealed that PTSD symptom severity groups (i.e., single symptom, multiple symptoms, subthreshold PTSD, PTSD) were differentially related to neuroticism and extraversion. Planned comparisons

indicated that neuroticism was higher and extraversion was lower in those who developed PTSD compared with those who did not develop PTSD.

HOLEVA, V., & TARRIER, N. (2001). **Personality and peritraumatic dissociation in the prediction of PTSD in victims of road traffic accidents.** *Journal of Psychosomatic Research*, 51, 687-692. *Objectives:* To investigate the contribution of personality and peritraumatic dissociation in the development of PTSD. *Method:* Victims of road traffic accidents (RTA) were assessed within 2-4 weeks (Time 1) of the accident and again between 4 and 6 months (Time 2). The Eysenck Personality Questionnaire (EPQ) and Peritraumatic Dissociation Experience Questionnaire (PDEQ) were administered at Time 1 and posttraumatic stress symptoms were assessed at Time 2. *Results:* 265 subjects were assessed at both time points. Although neuroticism, psychoticism, and peritraumatic dissociation were significantly correlated with posttraumatic symptoms, only the personality dimensions were independent and significant predictors of subsequent PTSD in a logistic regression. *Conclusions:* Consistent with the literature personality measures, especially neuroticism, are associated with the development of PTSD. However, peritraumatic dissociation was not found to be an independent predictor of PTSD.

MCFARLANE, A.C. (1992). **Avoidance and intrusion in post-traumatic stress disorder.** *Journal of Nervous and Mental Disease*, 180, 439-445. Longitudinal data from 290 firefighters who had completed questionnaires 4, 11, and 29 months after exposure to a natural disaster were used to examine the role of intrusive and distressing memories in the etiology of PTSD. At 42 months, all those who were at risk of having developed a psychiatric disorder ($N = 113$) and a randomly selected comparison group ($N = 34$) who had never developed symptoms were interviewed using the Diagnostic Interview Schedule. The intrusion subscale score of the Impact of Events Scale accounted solely for the etiological link between the disaster and posttraumatic disorders. Avoidance had no direct relationship with the onset of symptoms and appeared to be a defensive strategy to contain the distress generated by the re-experiencing of the disaster, indicating the importance of separating these phenomena from disorder mood and arousal in PTSD. An information processing model was validated using three different data sets, which suggests its robustness. Using cross-lagged panel correlations, a bidirectional relationship was demonstrated between disorder and intrusive recollections, suggesting that the intensity of recurring memories of a traumatic experience is as indicative of a disturbance of mood and arousal as the exposure to the trauma.

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. This review provides an overview of research on the influence of personality on the development, course, and behavioral expression of PTSD. The existing literature is discussed in relation to three broad-band personality traits that have been emphasized in personality and psychopathology research: negative emotionality (NEM), positive emotionality (PEM), and constraint/inhibition (CON). The primary conclusion derived from this review is that high NEM is the primary personality risk factor for the development of PTSD whereas low CON and low PEM serve as moderating factors that influence the form and expression of the disorder through their interaction with NEM. From this standpoint, a premorbid personality characterized by high NEM combined with low PEM is thought to predispose the trauma-exposed individual towards

an *internalizing* form of posttraumatic response characterized by marked social avoidance, anxiety, and depression. On the other hand, high NEM combined with low CON is hypothesized to predict an *externalizing* form of posttraumatic reaction characterized by marked impulsivity, aggression, and a propensity towards antisociality and substance abuse.

MILLER, M.W., GREIF, J.L., & SMITH, A.A. (2003). **Multidimensional Personality Questionnaire profiles of veterans with traumatic combat exposure: Externalizing and internalizing subtypes.** *Psychological Assessment, 15*, 205-215. This study used the Multidimensional Personality Questionnaire (MPQ) to identify personality-based subtypes of posttraumatic response. Cluster analyses of MPQs completed by combat veterans revealed subgroups that differed on measures relating to the externalization versus internalization of distress. The MPQ profile of the externalizing cluster was defined by low Constraint and Harmavoidance coupled with high Alienation and Aggression. Individuals in this cluster also had histories of delinquency and high rates of substance-related disorder. In comparison, the MPQ profile of the internalizing cluster was characterized by lower Positive Emotionality, Alienation, and Aggression and higher Constraint, and individuals in this cluster showed high rates of depressive disorder. These findings suggest that dispositions toward externalizing versus internalizing psychopathology may account for heterogeneity in the expression of posttraumatic responses, including patterns of comorbidity.

MILLER, M.W., KALOUPEK, D.G., DILLON, A.L., & KEANE, T.M. (in press). **Externalizing and internalizing subtypes of combat-related PTSD: A replication and extension using the PSY-5 Scales.** *Journal of Abnormal Psychology.* This study replicated and extended prior findings of internalizing and externalizing subtypes of posttraumatic response. Cluster analyses of MMPI-2 PSY-5 profiles obtained from 736 veterans with PTSD partitioned the sample into a low pathology cluster defined by personality scores in the normal range, an externalizing cluster characterized by low Constraint and high Negative Emotionality, and an internalizing cluster with high Negative Emotionality and low Positive Emotionality. Externalizers showed the highest rates of alcohol-related and antisocial personality disorders, internalizers the highest rates of panic and major depressive disorder. These findings support the development of a personality-based typology of posttraumatic response designed to account for heterogeneity in the expression of PTSD and associated psychopathology.

SCHNURR, P.P., & VIELHAUER, M.J. (1999). **Personality as a risk factor for PTSD.** In R. Yehuda (Ed.), *Risk factors for posttraumatic stress disorder* (pp. 191-231). Washington, DC: American Psychiatric Press. In this chapter, we review evidence relevant to the hypothesis that antecedent personality characteristics function as risk and protective factors in the development of PTSD or posttraumatic symptoms. The review is comprehensive but selective and favors empirical over case study material. We begin by discussing methodological issues that affect the

interpretation of risk factors as causes. We next provide a theoretical framework for understanding personality and how it could function as a risk factor. We then review the literature on the association between personality and PTSD. Our focus is on normal personality and personality disorder and not factors that might influence personality development (e.g., childhood emotional abuse).

SCHNURR, P.P., FRIEDMAN, M.J., & ROSENBERG, S.D. (1993). **Premilitary MMPI scores as predictors of combat-related PTSD symptoms.** *American Journal of Psychiatry, 150*, 479-483. *Objective:* The authors used data collected before military service to assess predictors of combat-related lifetime symptoms of PTSD. *Method:* The subjects were 131 male Vietnam and Vietnam-era veterans who had taken the MMPI in college and who were interviewed as adults with the Structured Clinical Interview for DSM-III-R. Scores on the basic MMPI scales were used to predict combat exposure, lifetime history of any PTSD symptoms given exposure, and lifetime PTSD classification (symptoms only, subthreshold PTSD, or full PTSD). *Results:* Group means on the MMPI scales were within the normal range. No scale predicted combat exposure. Hypochondriasis, psychopathic deviate, masculinity-femininity, and paranoia scales predicted PTSD symptoms. Depression, hypomania, and social introversion predicted diagnostic classification among subjects with PTSD symptoms. The effects persisted when amount of combat exposure was controlled for. *Conclusions:* Premilitary personality can affect vulnerability to lifetime PTSD symptoms in men exposed to combat.

VAN ZELST, W.H., DE BEURS, E., BEEKMAN, A.T.F., DEEG, D.J.H., & VAN DYCK, R. (2003). **Prevalence and risk factors of posttraumatic stress disorder in older adults.** *Psychotherapy and Psychosomatics, 72*, 333-342. *Background:* Posttraumatic stress disorder (PTSD) has scarcely been researched in the elderly. There is no population-based information on prevalence and risk factors in older persons. Patients with PTSD are often not recognized or incorrectly diagnosed. As the disorder has great implications for the quality of life, a correct diagnosis and treatment are crucial. Increased knowledge on vulnerability factors for PTSD can facilitate diagnostic procedures and health management in the elderly. *Methods:* PTSD cases were found following a two-phase sampling procedure: a random selection of 1,721 subjects were screened and in 422 subjects a psychiatric diagnostic interview was administered. Prevalence of PTSD and subthreshold PTSD were calculated. Vulnerability factors regarding demographics, physical health, personality, social factors, recent distress and adverse events in early childhood were assessed. *Results:* 6-month prevalence of PTSD and of subthreshold PTSD was 0.9 and 13.1%, respectively. The strongest vulnerability factors for both PTSD and subthreshold PTSD were neuroticism and adverse events in early childhood. *Conclusions:* This is the first population-based study on PTSD in older persons. With a 6-month prevalence of almost 1% the disease is not rare. Comparisons with younger populations suggest some accumulation of cases among older people reflecting the chronic risk factors, which are found in this study: neuroticism and adverse events in early childhood.

ADDITIONAL CITATIONS

Annotated by the Editor

BUNCE, S.C., LARSEN, R.J., & PETERSON, C. (1995). **Life after trauma: Personality and daily life experiences of traumatized people.** *Journal of Personality, 63*, 165-188.

Examined differences in personality and life experiences in 26 traumatized and 30 non-traumatized male and female college students. Relative to non-traumatized students, the traumatized students had higher levels of neuroticism, introversion, emotional instability, cognitive disturbance, emotional blunting, and interpersonal withdrawal. Being traumatized at an early age was associated with more negative outcomes.

DAVIDSON, J., KUDLER, H., & SMITH, R. (1987). **Personality in chronic post-traumatic stress disorder: A study of the Eysenck Inventory.** *Journal of Anxiety Disorders, 1*, 295-300.

Examined differences in personality between 16 Vietnam veterans and 14 World War II/Korean Conflict (WWII/KC) male veterans, all of who were PTSD patients, and between these patients and several comparison groups. The WWII/KC veterans had higher introversion and denial scores relative to the Vietnam veterans. The WWII/KC veterans had higher introversion and neuroticism relative to age-matched psychiatric controls. The PTSD patients had higher neuroticism relative to depressed patients.

HYER, L., BRASWELL, L., ALBRECHT, W., 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, 50*, 699-707.

Examined personality and personality disorder in 80 male veteran PTSD patients. Neuroticism and extraversion were associated with various disorders, whereas openness to experience was associated with fewer disorders. Of the personality measures, higher neuroticism was most consistently associated with greater PTSD severity.

LEE, K.A., VAILLANT, G.E., TORREY, W.C., & ELDER, G.H. (1995). **A 50-year prospective study of the psychological sequelae of World War II combat.** *American Journal of Psychiatry, 152*, 516-522.

Examined predictors and outcomes of combat exposure in 107 WWII veterans who had been initially studied as college students before serving in the military and then had been followed for 50 years. Neuroticism in adulthood was associated with a less warm childhood environment, but not with other childhood variables. Neuroticism also was related to depersonalization during combat but was unrelated to other measures of peritraumatic distress or to combat exposure.

LONIGAN, C.J., SHANNON, M.P., TAYLOR, C.M., FINCH, A.J., & SALLEE, F.R. (1994). **Children exposed to disaster: II. Risk factors for the development of post-traumatic symptomatology.** *Journal of the American Academy of Child and Adolescent Psychiatry, 33*, 94-105.

Examined predictors of PTSD in a cross-sectional study of 5,687 children who were exposed to a severe hurricane. PTSD was associated with greater exposure severity, but trait anxiety and emotional reactivity during the hurricane were stronger predictors of PTSD than were the exposure variables.

NIGHTINGALE, J., & WILLIAMS, R.M. (2000). **Attitudes to emotional expression and personality in predicting post-traumatic stress disorder.** *British Journal of Clinical Psychology, 39*, 243-254.

Studied 60 motor vehicle accident victims within 1 week of presenting to an emergency room and then obtained follow-up data on 45 of the victims 6 weeks later. Negative attitudes about emotional expression predicted higher intrusive symptoms and greater likelihood of diagnosis at 6 weeks, even after statistical control for initial symptoms, injury severity, personality, and coping.

O'TOOLE, B.I., MARSHALL, R.P., SCHURECK, R.J., & DOBSON, M. (1998). **Risk factors for posttraumatic stress disorder in Australian Vietnam veterans.** *Australian and New Zealand Journal of Psychiatry, 32*, 21-31.

Used univariate and multivariate logistic regression to screen 128 potential risk factors for PTSD in 641 Australian Vietnam veterans who took part in an epidemiological cohort study. By univariate test, neuroticism was associated with greater likelihood of PTSD, but was not significant when entered into multivariate analysis with 38 other statistically significant risk factors. Combat stressors accounted for the greatest likelihood, followed by pre-Vietnam psychiatric diagnoses.

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*, 663-669.

Used the NEO-PI to assess personality in a group of 100 male Vietnam veterans with PTSD. The authors present a normative personality profile for combat related PTSD that is characterized by very high neuroticism (T = 85) and low agreeableness (T = 25).

WEISS, D.S., MARMAR, C.R., METZLER, T.J., & RONFELDT, H.M. (1995). **Predicting symptomatic distress in emergency services personnel.** *Journal of Consulting and Clinical Psychology, 63*, 361-368.

Assessed PTSD and distress in 154 emergency workers who were involved in the 1989 freeway collapse during the San Francisco earthquake and 213 emergency workers from the same area who were not involved in the highway disaster. Using a measure of adjustment intended to capture neuroticism, the authors found that adjustment was significantly associated with higher levels of PTSD and general distress in both univariate analysis and multivariate analysis.

WILLIAMS, R. (1999). **Personality and posttraumatic stress disorder.** In W. Yule (Ed.), *Posttraumatic stress disorders: Concepts and therapy* (pp. 92-115). Chichester, England: Wiley.

Reviewed evidence on how personality affects and is affected by PTSD. The review is organized around 4 themes: personality as vulnerability to developing PTSD; how personality factors affect the course or expression of PTSD; how PTSD affects personality; and personality and PTSD as reflections of the same underlying process.

PILOTS UPDATE

When the PILOTS Database moved from the Dartmouth College Information System (DCIS) to the NISC BiblioLine service, we were able to offer many improvements in search capabilities and search results displays. BiblioLine offers extensive onscreen tutorials and help messages, and it is more tolerant of mistakes than DCIS was. However, users who had mastered the DCIS interface may encounter some problems in using the PILOTS Database on BiblioLine, simply because BiblioLine goes about things a bit differently.

The DCIS search software treated each word in a field as a searchable term. In a field that might contain several words, the software searched each word separately. Thus a search in the descriptor field for "Americans" yielded not only those records indexed under "Americans" but also those indexed under "African Americans," "European Americans," "Hispanic Americans," and so on. This is no longer the case in most PILOTS Database searches.

BiblioLine indexes some search fields with a *word index* and others with an *item index*. Which of these is applied to a field depends upon the nature of the data contained in that field. In order to obtain the best search results, it is important to know which type of index is used in the field(s) you are searching.

In a *word index*, only single words are indexed, but you may specify proximity or word order to search for phrases as well as single words. The PILOTS Database will retrieve all records in which the word(s) you entered appear in any field. When you use the **BiblioLine Basic interface**, this applies to the word(s) you type into the blank space to the left of the "Search" button (unless you choose to limit your search to title or index terms by clicking one of the boxes below that space).

In an *item index*, only those words or phrases that we have designated as possible search terms are indexed. In the PILOTS Database, the Index Terms (BiblioLine's term for descriptors) and Instruments fields use item indexes, as do several others. This means that you cannot search these fields by entering a single word of the descriptor or instrument title, as was possible under the DCIS interface.

It also means that by using the BiblioLine item indexes properly you can receive more precise search results than was previously possible.

This being the case, how do you find the terms you need to enter to accomplish your search?

For Index Terms (descriptors), you would consult the PILOTS Thesaurus, which is included in the *PILOTS Database User's Guide*. And for the standardized names of assessment instruments, you would consult the *PILOTS Database Instruments Authority List*. PDF versions of both may be consulted or downloaded from our website.

Or you could use BiblioLine's on-screen indexes:

- From the BiblioLine Basic interface, click on **Advanced Search (Pro)**. A new interface will appear in your browser window.
- Choose the field whose index you wish to consult, and click within its box.
- Then click the **Index** button to the right of the search boxes. The appropriate index for that field will appear in a new browser window, with a box in which to type the first few letters of the term you are looking for.
- Click on **Find Term**, and a list of terms will appear, each with a check-box to its left.
- When you find the exact term(s) you need, check their boxes; then use the **Search**, **Add to Search Field**, or **Overwrite Search Field** button at the top of the window to incorporate the term(s) to your search strategy.

Confused? There's also a **Help** button at the top of the window that will take you to a detailed explanation of the whole process.

There is always a tradeoff between simplicity and power. The BiblioLine version of the PILOTS Database offers many features that were not present in previous versions. The more of these features you use, the more complicated the search process becomes. If you need to increase the precision and recall of your searches, you will need to learn how to use these features effectively—or find someone (such as a reference librarian or an expert colleague) to help you. And don't hesitate to contact us if you run into a problem.

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