

Beyond Categorical Classifications: The Importance of Identifying Posttrauma Symptom Trajectories and Associated Negative Outcomes

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Studies have shown that among veterans deployed to Iraq and Afghanistan, posttraumatic stress symptoms (PTSS), as well as posttraumatic stress disorder (PTSD), are associated with increased risk of suicidal ideation.^{1,2} By concurrently mapping longitudinal trajectories of PTSS with an observational assessment of suicidal ideation, Madsen and colleagues³ have significantly contributed to this line of research. Unlike previous studies, which have examined the relation between PTSS and suicidal ideation at a single time point, the study by Madsen et al³ used a longitudinal approach to explore how changes in PTSS presentations are linked to a distal suicide-related outcome. Furthermore, they illustrated how research aimed at identifying and characterizing heterogeneous symptom trajectories is critical to understanding different pathways to risk and resilience.

This work by Madsen et al³ represents a growing body of research that has applied novel analytic techniques to empirically examine the latent structure of posttraumatic responses. Historically, many have debated whether certain mental disorders, including PTSD, are best conceptualized using categorical (eg, pathology versus normality) or dimensional (eg, continuous symptoms) models. The categorical approach proposes that PTSD is distinct from normal responses to extreme stressors, in both degree and kind.⁴ In contrast, the dimensional model maintains that PTSD most likely represents the extreme end of a continuum of response to potentially traumatic exposure and that the symptom-based cut points signifying a pathological response are somewhat arbitrary.^{4,5} While it is important to appreciate the clinical and practical utility of categorical approaches to PTSS, reliance on approaches that draw a discrete line between normal and pathological responses to trauma preclude exploration of symptom variations that are indicative of resilient coping.⁶

Although philosophical and theoretical differences between categorical and dimensional approaches and their implications for the field of psychiatry have been extensively discussed, their underlying assumptions were, until recently, largely untested. However, developments in data analysis and statistical methods provided means to empirically test the validity of these different models. Early

work in this area heavily relied on taxometric analysis, a statistical methodology specifically designed to test between categorical and dimensional models of latent variables.⁷ In fact, studies examining the latent structure of PTSS using taxometric analyses have demonstrated that the underlying latent structure of posttraumatic stress is more consistent with a dimensional rather than a categorical model.^{5,8,9}

Since then, Andersen and colleagues¹⁰ as well as others (eg, Berntsen et al,¹¹ Dickstein et al¹²) have examined the latent structure of PTSS responses using different approaches. Specifically, these prospective studies applied a set of analytic techniques (eg, latent class analysis, growth mixture modeling) to identify empirically validated symptom profiles that, once again, challenged the assumption that responses to potentially traumatic events develop in a fairly homogenous pattern across individuals. More importantly, Madsen et al³ extended this work to show how qualitatively distinct symptom trajectories were differentially linked to suicidal ideation.

The studies by Andersen et al¹⁰ and Madsen et al³ are particularly unique in that they offer a perspective on the categorical/dimensional debate that encourages an integration of both approaches (see also Kessler,¹³ Kraemer et al¹⁴). They showed that dimensional assessments of PTSS taken at different time points could be statistically transformed into 6 discrete classes or groupings that varied from each other, in regard to both their symptom patterns over time and their associations with suicidal ideation. In doing so, they underscored the utility of combining both models and highlighted several important areas for future work.

Research aimed at identifying unique risk and protective factors for distinct trajectory groups and related outcomes may offer additional insight into the etiologic underpinnings of different symptom courses and their relation to adverse outcomes, such as suicidal ideation. This includes consideration of other possible contributing factors to suicidal ideation (eg, depression, hopelessness, optimism) as well as relations between these factors and symptom trajectories. Along these lines, researchers may also consider how dimensional and categorical assessment can be used to advance understanding of etiologic factors—including the construct of trauma itself—as well as underlying psychological and neurobiological processes that may impact the onset and course of symptoms. Important questions remain unanswered regarding dimensional assessment of suicidal ideation (eg, intention, lethality, severity).¹⁵ Moreover, it would be

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important to show that variations in these predictors are linked to the different symptom profiles and their associated outcomes (eg, suicidal ideation) in meaningful ways. Only then can this information be used to tailor prevention and treatment strategies to selected groups.

In addition, clarification about trauma history, with a particular focus on identifying the relation between timing of exposure to a traumatic event and date of evaluation, would help clarify the temporal relation between these events and associated symptoms like suicidal ideation. Fine tuning assessment of temporal sequencing would be expected to facilitate understanding regarding the relative direction of potential causality. For example, the work by Madsen and colleagues³ raises the important question as to whether increases in suicidal ideation over the past year occurred concurrently with PTSS increases, or whether suicidal ideation developed as a result of PTSS changes. Research using longitudinal, multidimensional assessment strategies of suicidal ideation and suicidal behaviors with analyses of heterogeneity within symptom profile classes is encouraged. These additions have the potential to inform understanding regarding the dynamic nature of suicide risk, thereby contextualizing findings in a manner that would allow for moving beyond population-level analysis to using findings to facilitate person-specific suicide risk assessment.

The findings of Andersen et al¹⁰ and Madsen et al³ also highlight the importance of critical periods. Heterogeneous symptom trajectories, especially those that fluctuate over a longitudinal course, raise questions about timing of screening and delivery of interventions. Identification of critical periods based on initial symptom presentation most likely necessitate years of further empirical study and a more thorough understanding of unique etiologic factors. Until the field is able to accurately predict these critical periods, a transitional step may be to increase use of universal interventions aimed at ameliorating underlying shared susceptibilities, as well as promoting resilience. This method of intervention has been a focus of the transdiagnostic approach,^{16,17} which is built upon research suggesting that anxiety and depressive disorders share common underlying elements, such as negative affect. In regard to PTSD and suicidal ideation, shared cognitive and neuroanatomic factors, such as altered modulation of value attribution, reduced regulation of emotional and cognitive responses, and facilitation of acts in emotional contexts, may be areas for particular focus.¹⁸ For example, tailored interventions that target reduction of affective triggers and improve problem-solving abilities may improve emotion regulation abilities.¹⁹ This in turn would be expected to decrease risk for PTSD and suicidal behaviors. Focusing on reduction of overlapping susceptibilities prior to the development of pathological conditions (eg, PTSD) or behaviors (eg, suicide attempt) would also be expected to shift individual trajectories for some individuals, thereby negating the need for mental health interventions, which military personnel and veterans may find stigmatizing.

Although the focus of the current study³ was on suicidal ideation, findings have important implications

for suicidal behavior. Specifically, the high proportion of late-onset group participants that had experienced adverse life events postdeployment suggests possible increases in acquired capability to inflict lethal self-injury, an important precursor and risk factor for death by suicide. According to the Interpersonal Theory of Suicide,²⁰ the capability to engage in suicidal behavior is distinct from the desire to die by suicide and is strengthened by elevated pain tolerance and lowered fear of death. Thus, the accumulation of pre- and postdeployment traumatic events, whether these events are witnessed or directly experienced, may contribute heavily to acquired capability, thereby increasing risk for future suicidal behavior. Focusing on interventions aimed at decreasing desire for suicide, as well as providing psychoeducation about the risk of continued engagement in painful and provocative events, may be important clinical considerations for this high-risk group. Because environmental factors may play a pivotal role in reinforcing exposure to or engagement in further painful and provocative events (eg, unsafe housing, participation in a social group marked by impulsivity), providers might consider augmenting treatment approaches by targeting reasonably modifiable environmental factors (eg, means restriction, stimulus control, support system involvement) in addition to individual-level risk factors.

With the addition of these recent findings by Madsen and colleagues,³ as well as other seminal works (eg, Andersen et al,¹⁰ Berntsen et al,¹¹ Dickstein et al,¹² Ruscio et al⁸), sufficient evidence now exists to encourage widespread reconceptualization of PTSD from a dose response to a specific stressor to an adjustment to multiple stressors over the lifespan. Interestingly, we, the authors of this commentary, have previously made a similar argument in regard to understanding the range of outcomes following mild traumatic brain injury,²¹ the other signature condition²² of the conflicts in Iraq and Afghanistan. That is, short- and long-term challenges associated with poor functioning are “inextricably tied to . . . the unfolding of biological, psychological, and social processes through time.”^{23(p134)} Moreover, this switch will very likely allow for a more holistic approach to risk assessment, which takes into consideration events over the course of a lifespan. Thus, clinicians and researchers alike must continue to struggle to find balance between adoption of categorical models, which facilitate real world necessities such as billing for care, medical record documentation, and inclusion/exclusion criteria, and more nuanced understandings of responses to potentially traumatic events, which predict positive or negative outcomes such as suicidal ideation.

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