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Review

CONSIDERING ADJUSTMENT DISORDERS AS STRESS RESPONSE SYNDROMES FOR DSM-5

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STATEMENT AND SIGNIFICANCE OF ISSUES

Adjustment Disorder (AD) is included in this special issue because AD shares with posttraumatic stress disorder (PTSD), and acute stress disorder (ASD) the etiology of a stressful event that has precipitated a clinically significant alteration in cognitions, emotions, and/or behavior. The AD diagnostic criteria are shown in Table 1. Initially conceived as transitory diagnoses that should not exceed 6 months in duration in DSM-III[1] the AD criteria were expanded in DSM-IV to include a chronic form when the stressor persists for more than 6 months. Unlike PTSD, which requires that symptoms must present more than a month after exposure to a traumatic event, AD may be diagnosed immediately after an individual has a distressing experience. Furthermore, because AD may be diagnosed after any distressing event that causes significant distress or functional impairment, the crucial requirement in ASD and PTSD for a traumatic stressor as the precipitating event does not apply to AD. Nontraumatic stressors may also precede AD. This has both diagnostic advantages and clinical utility, as discussed below.

In this brief article, we will consider AD as a stress response syndrome, in agreement with Maercker et al.[2] We will not address the question of AD within the larger context of mood, conduct, and other anxiety disorders. We will discuss the current lack of a standardized assessment instrument for AD and suggest that this may be one reason why there has been so little empirical research on AD. We will review current DSM-IV as well as the proposed DSM-5 diagnostic criteria for AD and the rationale for these suggested revisions, especially with respect to the newly proposed ASD/PTSD subtype. Finally, we will present a theoretical context for AD as a stress response syndrome and suggest an agenda for future research.

LITERATURE SEARCH

Bibliographic searches were restricted to literature published in English since release of DSM-IV. Searches were conducted utilizing MEDLINE, PsychINFO, and The National Center for PTSD's Published International Literature on Traumatic Stress database. Titles and abstracts were searched using the key words: ADs, stress response syndromes, PTSD, subsyndromal PTSD, ASD, and psychological resilience and vulnerability. Relevant articles were supplemented by key reviews and analyses that preceded 1994.

RESULTS

NONSPECIFICITY VERSUS SPECIFICITY

According to Strain et al.,[3] AD was deliberately designed to be phenomenologically nonspecific. As shown in Table 1, there are no specific symptoms that must be present in order to make the diagnosis. All that is required is that unspecified stress-related alterations in mood, anxiety, or conduct (or combinations of the above) be associated with clinically significant distress or functional impairment. The various subtypes of AD encompass a spectrum of clinical presentations in which depressive symptoms, anxious symptoms, or behavioral alterations, respectively, may be the primary focus for clinical concern. Such nonspecificity has had great clinical utility since it has provided a diagnostic niche for clinically significant presentations that do not conform to another discrete DSM-IV diagnosis but are of sufficient severity to qualify as a psychiatric disorder, whether as end-stage diagnostic entities in their own right or as prodromal expressions of more discrete disorders, yet to emerge. Thus, AD has provided a useful tool to permit diagnosis and treatment of an emotional or behavioral alteration that merits clinical intervention. As an example of the clinical significance

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TABLE 1. Diagnostic criteria for adjustment disorders

DSM-IV

A. The development of emotional behavioral symptoms in response to an identifiable stressor(s) occurring within 3 months of the onset of the stressor(s)

B. Marked distress that is in excess of what would be proportionate to the stressor
or
Significant impairment in social, occupational or other areas of functioning

C. Does not meet criteria for another Axis 1 disorder and is not merely an exacerbation of a preexisting Axis I or II disorder

D. Does not include normal bereavement

E. Symptoms do not persist more than 6 months after removal of stressor (or its consequences)

Specify, if:
Acute: If disturbance lasts <6 months
Chronic: If disturbance lasts >6 months

Subtypes:
With depressed mood
With anxiety
With mixed anxiety and depression
With disturbance of conduct
With mixed disturbance of emotions and conduct

Unspecified

of AD, Runeson et al.[4] have reported a shorter (1 month) interval between AD diagnosis and the emergence of suicidal behavior than for depression (3 months), borderline personality disorder (30 months) and schizophrenia (47 months). This indicates that a significant number of very seriously distressed and potentially suicidal individuals who are at greatest risk for self-harm may not meet any other diagnosis besides AD. It indicates the clinical utility of this diagnosis since AD may be the only diagnostic red flag in such circumstances.

Despite its usefulness to diagnose patients distressed by some stressful event, the fact that its diagnostic criteria do not include specific symptoms may in part explain why there has been very little research on AD per se.[5–6] There is no recognized or standardized diagnostic instrument for epidemiological research or clinical trials covering AD.[7] In principle, such an instrument would include items tapping mood, anxiety and behavior, but the careful psychometric research needed to develop and standardize such an assessment tool has yet to be accomplished. To our knowledge, Einsle et al.[8] are the only group of investigators who attempted to develop and validate a questionnaire for screening AD. They examined two patient cohorts, from a cardiac and psychosomatic clinic, respectively, with a screening instrument that includes items inquiring about both stressful experiences and distressing reactions (see below). Although such preliminary work on an AD screening scale is an encouraging development, more work needs to be carried out to address reliability, validity, and generalizability of this measure and of the AD construct, itself. Development of such an instrument is critical if we hope to develop an evidence base that might inform future revisions of the AD diagnostic criteria. At present the "gold standard" for diagnosing ADs remains the trained clinician. For the most part, this will remain so in DSM-5.

Einsle et al.[8] have taken a different approach and proposed a set of criteria that are much more specific than those in DSM-IV. Clearly influenced by Horowitz's[9] classic work on stress response syndromes, they propose diagnostic criteria in which the stressful event must be followed both by *intrusive symptoms* (e.g. involuntary stressful reminders or excessive worrying/ruminating about the event) and *avoidance behavior* (e.g. avoidance or repression of feelings and thoughts about the event or loss of interest in work, social life and leisure activities). The resemblance between Einsle et al.'s AD formulation and PTSD is by no means accidental since Horowitz's model of stress response syndromes, marked by intrusion and avoidance symptoms, provided the template for the original PTSD diagnostic criteria presented in DSM-III.[2]

We believe that from a traditional DSM-IV AD perspective, these criteria are too narrow. They remove the broad-spectrum nonspecificity that has made the AD diagnosis so useful to clinicians, as discussed previously. On the other hand, they re-conceptualize AD as a stress response syndrome, putting it within a theoretical context that places AD at one end of a clinical continuum that ends with ASD and PTSD. As first proposed by Horowitz, Einsle et al. suggest that any stressful event (whether it is traumatic or not) may provoke the intrusive recollections and avoidance symptoms, which DSM-IV currently restricts to ASD and PTSD. Furthermore, the Einsle et al. criteria suggest that "subsyndromal" expressions of ASD or PTSD symptoms might have a legitimate diagnostic home within the AD diagnosis. We will come back to this later, when we consider the ASD/PTSD subtype of AD proposed for DSM-5.

The issue of "subsyndromal" expression also applies to the current AD subtypes. In addition to its clinical utility as a nonspecific residual diagnosis, an AD subtype diagnosis is sometimes given to individuals who exhibit mood and/or anxiety and/or behavioral symptoms that do not exceed the diagnostic threshold for depression, an anxiety disorder or another more specific disorder but are nonetheless severe enough to require clinical attention.

With regard to ASD or PTSD, for example, individuals who meet the DSM-IV ASD/PTSD Criterion A (A1 reflects exposure to a traumatic event and A2 reflects reacting with "fear, helplessness or horror") but do not meet all of the other PTSD diagnostic criteria (for re-experiencing, avoidance/numbing hyperarousal, and dissociative symptoms) should receive the AD diagnosis since there is no partial/subsyndromal ASD or PTSD diagnosis within DSM-IV (despite a great deal of research on this matter, see Friedman et al.[10]) The same issue applies to individuals exhibiting subsyndromal event-related mood, anxiety, and/or behavioral reactions that fail to meet criteria for another Axis I disorder.

DSM-IV DIAGNOSTIC CRITERIA

As shown in Table 1, the DSM-IV diagnostic criteria are brief and straightforward. First, (Criterion A) there must be a recognizable stressor within the past 3 months, which appears to be associated with onset of symptoms. Second, (Criterion B) the clinician must conclude that either the magnitude of related distress or the severity of functional impairment exceeds a normal reaction to such a stressor and is clinically significant. Third, (Criterion C) the clinical pattern cannot meet criteria for another DSM disorder. Fourth, (Criterion D) bereavement is excluded as a qualifying event. Fifth, (Criterion E) symptoms should remit with 6 months after the stressor (or its consequences) is removed. There are acute and chronic specifiers. Finally, there are a variety of mood, anxiety, conduct, and mixed subtypes.

PROPOSED DSM-5 DIAGNOSTIC CRITERIA

Few modifications to the AD criteria have been suggested for DSM-5. This is primarily because there has been so little empirical research on AD since DSM-IV, and thus any proposed changes would have only limited empirical support. There are, however, three criteria that were discussed quite extensively: (a) retaining the B Criterion, either "significant distress or functional impairment" rather than requiring that both be present, as suggested by Baumeister and Kufer[5]; (b) eliminating Criterion D, the bereavement exclusion; and (c) adding an ASD/PTSD subtype.

CRITERION B

An important aspect of the AD diagnostic criteria is that symptoms "must cause significant distress or functional impairment." Although many other DSM-IV disorders also include this criterion, these disorders also include additional specific symptom clusters, which aid in differentiating disorder from nondisorder. This is why several investigators[5,7,11] have recommended raising the bar for the B Criterion and stipulating that affected individuals should exhibit *both* significant distress *and* functional impairment to meet AD diagnostic criteria. The spirit of this recommendation is to increase the likelihood that individuals who receive the AD diagnosis are exhibiting a maladaptive and abnormal reaction to the stressful experience. This recommendation was prompted by a concern that without a more stringent B criterion, there is a risk of over-pathologizing normal reactions to distressing events. The argument against raising the bar higher for AD than for many other DSM-IV disorders is that there is no empirical justification for doing so. Indeed, there are no studies showing the prevalence of AD with the current B Criterion versus the more stringent criterion under discussion. Since the entire DSM-5 approach stipulates that there should be a very high threshold for any modification and that proposed changes should be based on empirical evidence, it has been proposed *not* to change Criterion B. Therefore, the requirement will be for *either* significant distress *or* functional impairment, and not for both.

CRITERION D

Both major depressive disorder (MDD) and AD have a bereavement exclusion. Individuals expressing depressive symptoms during bereavement (e.g. feelings of sadness, insomnia, poor appetite, weight loss) cannot be given a diagnosis of MDD unless the symptoms persist for more than 2 months (although this interval may vary in different cultures). Recent research on depression following bereavement compared to depression following other losses (such as divorce, job loss, bankruptcy, or other stressful life events) has indicated that there does not seem to be any difference between individuals who meet MDD criteria with or without bereavement. The two groups do not significantly differ in age of onset of depression, number of prior episodes, duration of the index episode, number of endorsed DSM-IV depressive symptoms, risk for future episodes, or patterns of comorbidity.[12,13] Such findings have prompted several investigators to call for an elimination of the bereavement exclusion in the DSM-5 diagnostic criteria for MDD.[14,15] Furthermore, these articles express concern that such grieving individuals should not have to wait 2 months before they are considered appropriate candidates for antidepressant medications or therapy. As a result, the DSM-5 Mood Disorders Work Group has proposed elimination of the bereavement exclusion criterion for MDD in DSM-5.[16]

Should these considerations should also apply to AD? Although there is no research that has specifically investigated the bereavement exclusion in AD, the rigorous findings with regard to MDD have been judged directly applicable to AD. Given no evidence to the contrary, and given that the depressive subtype of AD is a subsyndromal depressive disorder, it seems reasonable to assume that individuals diagnosed with the depressed AD subtype would exhibit little difference with regard to severity of distress, magnitude of functional impairment, specific symptoms, patterns of comorbidity and other indices monitored in the aforementioned studies on depression, whether or not the precipitant was suffering from loss of a loved one or some other stressful event. Therefore, the DSM-5 Anxiety Disorders Work Group has proposed to eliminate the bereavement exclusion for AD in DSM-5.

NEW SUBTYPES: THE ASD/PTSD SUBTYPE

Approximately 60 publications have reported on the prevalence and morbidity of partial/subsyndromal PTSD.[10] The term "partial/subsyndromal" applies to people with clinically significant posttraumatic

reactions who fail to exceed the PTSD diagnostic threshold (usually for lack of one or two symptoms). Such people often exhibit considerable distress and functional impairment and, in DSM-IV, must be diagnosed as having an AD. The problem with the AD diagnosis for both clinical and research purposes is that there is no way to distinguish individuals exposed to traumatic events from others exposed to nontraumatic events (such as adverse interpersonal, financial, or other life experiences), who exhibit problems with mood, anxiety, or conduct.

It is clear at this point that there will not be a partial/subsyndromal PTSD diagnosis included under PTSD in DSM-5 because the research is inconclusive.[10] Therefore, it has been proposed to add a specific ASD/PTSD subtype to the menu of AD subtypes. It should be noted that this will not cause any significant diagnostic change, since the proper diagnosis for such individuals has always been an AD diagnosis. What it will do, however, is to establish a very specific AD subtype for both clinical and research purposes. It will make it possible to carry out clinical trials and basic research on people with partial/subsyndromal PTSD to determine how and whether they differ from individuals with full PTSD with regard to therapeutic responsivity and with regard to pathophysiology.

We recommend that when diagnosing the ASD/PTSD subtype, that specific PTSD reexperiencing, avoidant/numbing, and hyperarousal symptoms be documented with the understanding that all that is needed for an AD diagnosis is the presence of one such symptom that causes persistent extreme distress or functional incapacity.

Another application of the ASD/PTSD subtype will be for clinical assessment during the first months following exposure to a traumatic event. As with proposed DSM-5 ASD criteria, we recommend that the acute distress persist for at least 3 days before making any diagnosis. This is because acute, and rapidly reversible, posttraumatic distress is commonly seen during the first 3 days after exposure to a traumatic event.[17]

The ASD/PTSD subtype will enable military or disaster mental health clinicians to identify people who are acutely exhibiting ASD symptoms and who do not meet full diagnostic criteria; such individuals should receive careful monitoring, if not immediate intervention. Such people are potentially at risk for developing PTSD because subsyndromal ASD (defined as meeting criteria for only three of the four ASD symptom clusters—often by omitting the dissociative cluster) predicts subsequent PTSD as well as full ASD.[17]

Finally, the ASD/PTSD subtype will provide a diagnostic niche for people who meet the full DSM-5 PTSD B-H criteria following exposure to an extremely stressful but "nontraumatic" event (e.g. an event that does not satisfy Criterion A). Again, such individuals would ordinarily receive the AD diagnosis but will now have a much more specific syndrome for clinical and research purposes, as mentioned previously.

CLINICAL AND THEORETICAL CONSIDERATIONS

A useful biological context within which the pathophysiology of depression, PTSD and anxiety disorders is currently understood is that proposed by Selye[18] based on his classic work on the key role of the hypothalamic–pituitary–adrenocortical (HPA) system in the human stress response. Such work has been updated by our current, more sophisticated understanding of the neurocircuitry and psychobiological systems that mediate and moderate this response. Stress-induced alterations in HPA function are well known in depression, PTSD, and in other anxiety disorders.[19–24] Expanding on the suggestion by Maerker et al.[11] to consider AD as a stress response syndrome, it would be useful to know how the HPA system operates in an AD, and whether each AD subtype exhibits similar psychobiological alterations. Given the great body of research[25] showing stress-related HPA reactions, it is likely that (at least some) AD subtypes are associated with altered HPA mechanisms.

Chrousos and Gold[20] and McEwen[26] have examined the psychobiological differences between depression and chronic stress syndromes. Friedman and McEwen[27] have carried out the same with respect to PTSD, as have others with regard to anxiety disorders.[19,23] Overarching constructs such as allostatic load are useful in all cases. Furthermore, there is considerable overlap between depression, PTSD, and certain anxiety disorders with regard to some associated medical abnormalities (e.g. endocrine, cardiovascular, metabolic, immunological, etc). This overlap, however, is far from perfect and there may also be some differences between specific Axis I psychiatric disorders and chronic stress in this regard. Extending this argument to ADs, it is unknown whether psychobiological abnormalities associated with depression will be seen in the AD depressive subtype, whether alterations found in anxiety disorders will be found in the AD anxiety subtype, and whether there will be a psychobiological difference between PTSD and the ASD/PTSD subtype of ADs. In other words, we propose two fruitful lines of research with regard to HPA function: one comparing AD subtypes with each other; and one comparing specific AD subtypes (e.g. depressive subtype) with the parent disorder (e.g. depression).

Another way to consider this matter is to consider current findings regarding individual differences with regard to vulnerability and resilience. Kilpatrick et al.[28] have shown that individuals with the short allele of the serotonin transporter gene (5-HTT LPR) who had high hurricane exposure and low social support were at greater risk to develop PTSD than a matched cohort with the long allele of this gene. This study replicates several trials regarding gene × environment

interactions for depression[28–30] and raises the critical question of poststress/traumatic/depressive vulnerability versus resilience. It is already known that most people exposed to traumatic events or losses do not develop PTSD, depression, or anxiety disorders.[31] Although data are lacking; it is reasonable to suggest, by extension, that most people exposed to nontraumatic stressful events do not develop AD or another psychiatric disorder. This raises a number of questions. Do the same genetic differences determine vulnerability versus resilience in depression, PTSD, other anxiety disorders and AD? Are the same psychobiological mechanisms involved?[32,33] Does AD exhibit shared neural substrates, familiarity, shared genetic risk factors, shared environmental risk factors, shared biomarkers, shared temperamental antecedents, and/or shared abnormalities of cognitive or emotional processing as people with depression, PTSD, ASD, or other anxiety disorders? Finally, will treatments that effectively produce clinical remission in depression, anxiety disorders, PTSD, or ASD also be effective for the respective subtypes of AD? Hopefully, the HPA heuristic may provide a useful psychobiological context within which to encourage both basic research and clinical trials that will enhance our general understanding of the relationship between stress response syndromes, depression, anxiety disorders, and PTSD. It should also provide a theoretical context within which to investigate different therapeutic approaches for the different AD subtypes.

CONCLUSIONS

The traditional nonspecificity of AD has provided a very useful clinical option for clinically distressed individuals who do not meet diagnostic criteria for a more specific disorder. On the other hand, such nonspecificity has resulted in a lack of specific assessment instruments a paucity of clinical trials, and a dearth of knowledge about AD.

We have proposed that AD should be considered as a stress response syndrome. Furthermore, we suggest that AD subtypes might be regarded as "subsyndromal" clinical expressions of more specific Axis I diagnoses. Such an approach should stimulate clinical trials as well as more basic research, both of which have been lacking with regard to AD.

REFERENCES

1. American Psychiatric Association on Nomenclature and Statistics. Diagnostic and Statistical Manual of Mental Disorders. 3rd ed. Washington, DC: American Psychiatric Association; 1980.
2. Maercker A, Einsle F, Kollner V. Adjustment disorder—a new concept of diagnosing. Psychopathology 2007;40:135–146.
3. Strain JJ, Klipstein K, Newcorn J. Adjustment disorders. In: Gelder MG, Lopez-Ibor Jr JJ, Andreasen NC, editors. The New Oxford Textbook of Psychiatry. Oxford: Oxford University Press; 2009.
4. Runeson BS, Beskow J, Waern M. The suicidal process in suicides among young people. Acta Psychiatr Scand 1996;93: 35–42.
5. Baumeister H, Kufner K. It is time to adjust the adjustment disorder category? Curr Opin Psychiatry 2009;22:409–412.
6. Helmchen H, Linden M. Subthreshold disorders in psychiatry: clinical reality, methodological artefact, and the double-threshold problem. Compr Psychiatry 2000;41:1–7.
7. Casey P, Maracy M, Kelly BD, et al. Can adjustment disorder and depressive episode be distinguished? Results from ODIN. J Affect Disord 2006;92:291–297.
8. Einsle F, Kollner V, Daunemann S, Maercker A. Development and validation of a self-report for the assessment of adjustment disorder. Psychol Health Med 2010;15:584–595.
9. Horowitz MJ. Stress Response Syndromes. New York: Jason Aronson; 1976.
10. Friedman MJ, Resick PA, Bryant RA, Brennin CR. Considering PTSD for DSM-5. Depression and Anxiety 2011, in press.
11. Maercker A, Einsle F, Köllner V. Adjustment disorders as stress response syndromes: A new diagnostic concept and its exploration in a medical sample. Psychopathology 2007;40: 135–146.
12. Kendler KS, Myers J, Zisook S. Does bereavement-related major depression differ from major depression associated with other stressful life events? Am J Psychiatry 2008;165: 1449–1455.
13. Wakefield JC, Schmitz MF, First MB, Horwitz AV. Extending the bereavement exclusion for major depression to other losses: evidence from the National Comorbidity Survey. Arch Gen Psychiatry 2007;64:433–440.
14. Zisook S, Kendler KS. Is bereavement-related depression different than non-bereavement-related depression? Psychol Med 2007;37:779–794.
15. Zisook S, Shear K, Kendler KS. Validity of the bereavement exclusion criterion for the diagnosis of major depressive episode. World Psychiatry 2007;6:2.
16. Fawcett J. Mood disorders in DSM-5. Presented at Annual Meeting of American Psychiatric Association, New Orleans, LA, May 25, 2010.
17. Bryant RB, Friedman MJ, Spiegel D, Ursano R, Strain J. A review of Acute Stress Disorder in DSM-5. Depression and Anxiety 2011, in press.
18. Selye H. The Stress of Life. New York: McGraw-Hill; 1956.
19. Arborelius L, Owens MJ, Plotsky PM, Nemeroff CB. The role of corticotropin-releasing factor in depression and anxiety disorders. J Endocrinol 1999;160:1–12.
20. Chrousos GP, Gold PW. The concepts of stress and stress system disorders overview of physical and behavioral homeostasis. J Am Med Assoc 1992;267:1244–1252.
21. Kim J, Gorman J. The psychobiology of anxiety. Clin Neurosci Res 2005;4:335–347.
22. Southwick SM, Davis LL, Aikins DE, et al. Neurobiological alterations associated with PTSD. In: Friedman MJ, Keane TM, Resick PA, editors. Handbook of PTSD: Science and Practice. New York: Guilford Press; 2007:166–189.
23. Strohle A, Holsboer F. Stress response neurohormones in depression and anxiety. Pharmacopsychiatry 2003;36:207–214.
24. Yehuda R. Status of glucocorticoid alterations in post-traumatic stress disorder. Ann NY Acad Sci 2009;1179:56–69.
25. Dienstbier RA. Arousal and physiological toughness: implications for mental and physical health. Psychol Rev 1989;96: 84–100.
26. McEwen BS. Protection and damage from acute and chronic stress: allostasis and allostatic overload and relevance to the

pathophysiology of psychiatric disorders. Ann NY Acad Sci 2004; 1032:1–7.
27. Friedman MJ, McEwen BS. Posttraumatic stress disorder, allostatic load, and medical illness. In: Schnurr PP, Green BL, editors. Trauma and Health: Physical Health Consequences of Exposure to Extreme Stress. Washington, DC: American Psychological Association; 2004:157–188.
28. Kilpatrick DG, Koenen KC, Ruggerio KJ, et al. The serotonin transporter genotype and social support and moderation of posttraumatic stress disorder and depression in hurricane-exposed adults. Am J Psychiatry 2007;164:1693–1699.
29. Caspi A, Sugden K, Moffitt TE, et al. Influence of life stress on depression: moderation by polymorphism in the 5-HTT gene. Science 2003;301:386–389.
30. Kaufman J, Yang B-Z, Douglas-Palumberi H, et al. Social supports and serotonin transporter gene moderate depression in maltreated children. Proc Natl Acad Sci USA 2004;101: 17316–17321.
31. Kessler RC, Sonnega A, Bromet E, et al. Posttraumatic stress disorder in the National Comorbidity Survey. Arch Gen Psychiatry 1995;52:1048–1060.
32. Charney DS. Psychobiological mechanisms of resilience and vulnerability: implications for the successful adaptation to extreme stress. Am J Psychiatry 2004;161:195–216.
33. Haglund ME, Nestadt PS, Cooper NS, et al. Psychobiological mechanisms of resilience: relevance to prevention and treatment of stress-related psychopathology. Dev Psychopathol 2007;19: 889–920.
34. Phillips K, Craske M, Friedman MF, Stein DS. Special DSM-V issues on anxiety, obsessive-compulsive spectrum, posttraumatic, and dissociative disorders (Editorial). Depression and Anxiety 2009;27:91–92.