

## The Empirical Basis of Generalized Anxiety Disorder

Timothy A. Brown, Psy.D., David H. Barlow, Ph.D., and Michael R. Liebowitz, M.D.

**Objective:** The authors review the empirical data on generalized anxiety disorder, a diagnostic category that has been among the more conceptually challenging in psychiatric nosology. **Method:** Published studies and recent findings that were considered by the Generalized Anxiety Disorder Subcommittee of the DSM-IV Anxiety Disorders Work Group are reviewed. Among the issues examined are diagnostic reliability, comorbidity, boundaries with other disorders, and clinical features. **Results:** A variety of data on the reliability and validity of generalized anxiety disorder have been produced. Some authors have suggested that generalized anxiety disorder is better conceptualized as a vulnerability that should be located on axis II, and others have recommended that the category be eliminated. Although the diagnostic reliability of generalized anxiety disorder is lower than that of other anxiety disorders, the features constituting the diagnostic criteria for generalized anxiety disorder have been found to be reliable. An important development has been the determination of a set of somatic symptoms associated with generalized anxiety disorder that differs substantially from those for other anxiety disorders. These findings led to reduction in the number of items in the symptom criterion, from 18 in DSM-III-R to six in DSM-IV. Another substantial revision is greater emphasis on the uncontrollability of worry. **Conclusions:** Whereas the data on construct and discriminant validity, age at onset, course, familial transmission, and response to treatment generally support the DSM-IV definition of generalized anxiety disorder, the construct continues to have weaknesses and further research is needed.

(Am J Psychiatry 1994; 151:1272-1280)

With the advent of DSM-III-R in 1987, generalized anxiety disorder was no longer considered a residual diagnostic category. Moreover, the diagnostic criteria for DSM-III-R generalized anxiety disorder were revised substantially such that the disorder had its own key feature: excessive and/or unrealistic

Received Aug. 5, 1993; revision received March 14, 1994; accepted March 28, 1994. From the Center for Stress and Anxiety Disorders, University at Albany, State University of New York, and the New York State Psychiatric Institute and Department of Psychiatry, Columbia University College of Physicians and Surgeons. Address reprint requests to Dr. Brown, Center for Stress and Anxiety Disorders, 1535 Western Ave., Albany, NY 12203.

The views expressed in this article are those of the authors and do not represent the official positions of the Task Force on DSM-IV or the American Psychiatric Association.

The authors thank Kenneth S. Kendler and Thomas D. Borkovec for their comments on an earlier draft of this manuscript.

worry in areas unrelated to another axis I disorder. In addition, the associated symptom criterion was revised to require the presence of at least six of 18 symptoms from three clusters: motor tension, autonomic hyperactivity, and vigilance and scanning. One impetus for these revisions was the fact that DSM-III generalized anxiety disorder was associated with low diagnostic reliability, perhaps attributable partially to its residual status in this system (1-3).

In the 7 years since generalized anxiety disorder was reformulated, numerous studies have produced data bearing on the reliability and validity of the disorder and its defining features. The purpose of the present paper is to review the collective findings on the reliability and validity of generalized anxiety disorder and the role these data played in the deliberations of the Generalized Anxiety Disorder Subcommittee of the DSM-IV Anxiety Disorders Work Group. Among the issues to

be-considered are diagnostic reliability (e.g., interrater agreement), rates and patterns of comorbidity, boundary issues such as distinguishability from "neighboring" disorders (e.g., obsessive-compulsive disorder), and other clinical features (e.g., type of onset, age at onset, family/genetic data, treatment response). In addition, the reliability and validity of specific features constituting the diagnostic criteria for generalized anxiety disorder (i.e., excessive worry, associated symptoms) will be discussed.

### VALIDITY AT THE SYNDROME LEVEL

Studies examining the reliability of the DSM-III-R anxiety disorders have shown consistently that generalized anxiety disorder is among the disorders with the lowest diagnostic agreement (4, 5). For example, in a recent study from our clinic (4), the kappa for generalized anxiety disorder as a principal diagnosis was 0.57. Moreover, investigators examining rates and patterns of comorbidity have noted that generalized anxiety disorder is the most frequently assigned additional diagnosis in patients with a principal anxiety or mood disorder (6-8). In addition, when generalized anxiety disorder is the principal diagnosis, it is associated with the highest rates of comorbidity among the DSM-III-R anxiety disorders (6, 7, 9). With regard to classification, these findings might be interpreted as reflecting poor discriminant validity among generalized anxiety disorder and other diagnostic categories—namely, as indicating that the diagnostic system is distinguishing phenomena (i.e., features of generalized anxiety disorder) that could be categorized more parsimoniously if combined. Perhaps it is this issue that poses the most substantial threat to the validity of generalized anxiety disorder. Indeed, this disorder was the focus of considerable debate during the evaluation and revision of the criteria for DSM-IV. For these and other reasons, some involved in the DSM-IV process suggested that the evidence might not be sufficiently strong to retain generalized anxiety disorder as a diagnostic category and that it might be better placed in the appendix of disorders in need of further study.

### Factors Relating to Diagnostic Reliability

Given the salience of diagnostic reliability for the issue of the syndrome validity (6), it is important to consider factors that may be contributing to the lower rates of diagnostic agreement for DSM-III-R generalized anxiety disorder. For example, recent conceptualizations of generalized anxiety disorder have referred to the diagnosis as the "basic" anxiety disorder because its defining features (i.e., worry or "anxious expectation," hyperarousal) reflect basic processes of anxiety (1, 10). If this is indeed the case, then one would expect that the distinctiveness of generalized anxiety disorder would be mitigated by the fact that its features are present to some extent in all of the DSM-III-R anxiety disorders, and possibly the mood disorders as well. Thus, whereas

be considered are diagnostic reliability (e.g., interrater agreement), rates and patterns of comorbidity; boundary issues such as distinguishability from "neighboring" disorders (e.g., obsessive-compulsive disorder), and other clinical features (e.g., type of onset, age at onset, family/genetic data, treatment response). In addition, the reliability and validity of specific features constituting the diagnostic criteria for generalized anxiety disorder (i.e., excessive worry, associated symptoms) will be discussed.

#### VALIDITY AT THE SYNDROME LEVEL

Studies examining the reliability of the DSM-III-R anxiety disorders have shown consistently that generalized anxiety disorder is among the disorders with the lowest diagnostic agreement (4, 5). For example, in a recent study from our clinic (4), the kappa for generalized anxiety disorder as a principal diagnosis was 0.57. Moreover, investigators examining rates and patterns of comorbidity have noted that generalized anxiety disorder is the most frequently assigned additional diagnosis in patients with a principal anxiety or mood disorder (6-8). In addition, when generalized anxiety disorder is the principal diagnosis, it is associated with the highest rates of comorbidity among the DSM-III-R anxiety disorders (6, 7, 9). With regard to classification, these findings might be interpreted as reflecting poor discriminant validity among generalized anxiety disorder and other diagnostic categories—namely, as indicating that the diagnostic system is distinguishing phenomena (i.e., features of generalized anxiety disorder) that could be categorized more parsimoniously if combined. Perhaps it is this issue that poses the most substantial threat to the validity of generalized anxiety disorder. Indeed, this disorder was the focus of considerable debate during the evaluation and revision of the criteria for DSM-IV. For these and other reasons, some involved in the DSM-IV process suggested that the evidence might not be sufficiently strong to retain generalized anxiety disorder as a diagnostic category and that it might be better placed in the appendix of disorders in need of further study.

#### *Factors Relating to Diagnostic Reliability*

Given the salience of diagnostic reliability for the issue of the syndrome validity (6), it is important to consider factors that may be contributing to the lower rates of diagnostic agreement for DSM-III-R generalized anxiety disorder. For example, recent conceptualizations of generalized anxiety disorder have referred to the diagnosis as the "basic" anxiety disorder because its defining features (i.e., worry or "anxious expectation," hyperarousal) reflect basic processes of anxiety (1, 10). If this is indeed the case, then one would expect that the distinctiveness of generalized anxiety disorder would be mitigated by the fact that its features are present to some extent in all of the DSM-III-R anxiety disorders, and possibly the mood disorders as well. Thus, whereas

findings of lower reliability (and high comorbidity) could be interpreted as indicative of the poor discriminant validity of generalized anxiety disorder, these data, when considered with other findings reviewed in the following sections (e.g., on age at onset, temporal sequence in relation to co-occurring disorders), may also be viewed as lending support to the conceptualization of generalized anxiety disorder as the basic anxiety disorder.

Another factor that has been posited to contribute to the lower diagnostic reliability of generalized anxiety disorder is the fact that the diagnosis lacks a clear behavioral marker to facilitate its differentiation (e.g., compulsions in obsessive-compulsive disorder). Indeed, the existing diagnostic reliability data (4) indicate that diagnoses with these features (e.g., simple phobia, obsessive-compulsive disorder) evidence higher rates of agreement than those without overt markers (e.g., generalized anxiety disorder, panic disorder without agoraphobia).

In another study producing data bearing on this issue, Zinbarg and Barlow (unpublished 1994 manuscript) examined the construct validity of the anxiety disorders by means of the factor analysis of scores from 23 subscales of measures included in an initial intake battery assessing anxiety and related dimensions (e.g., panic, anxiety sensitivity, depression, compulsions, social anxiety). The subjects were 432 patients consecutively admitted to an outpatient anxiety disorders clinic and 32 normal comparison subjects. Five primary factors (panic, agoraphobia, social anxiety, obsessions-compulsions, general anxiety) and a higher-order factor (negative affect) were derived. Using factor scores calculated for each subject, the authors examined the extent to which the different DSM-III-R anxiety disorder diagnoses evidenced characteristic factor-score profiles through discriminant analysis. Whereas certain diagnostic groups had significantly higher scores on a specific factor (e.g., the patients with social phobia had significantly higher scores on social anxiety than the other groups), the patients with generalized anxiety disorder, although having higher scores than the normal comparison subjects on all factors, were not differentiated from the other anxiety disorder groups on any one factor. Nevertheless, profile analyses revealed significant differentiation between the patients with generalized anxiety disorder and the other groups, indicating that the patients with generalized anxiety disorder had a characteristic factor-score profile. Consistent with the position we have outlined, these results indicate that, whereas the patients with generalized anxiety disorder could not be differentiated on the basis of any one specific dimension assessed in this study (thus attesting to a proposed source of lower diagnostic reliability), their presentation was unique with regard to their profile of scores on a variety of dimensions of anxiety. Moreover, it is possible that there are other specific dimensions (not tapped by the measures used in the study) that would differentiate patients with generalized anxiety disorder from other groups.

It does not appear that the lower diagnostic reliability of generalized anxiety disorder is due to a problem in the boundary with obsessive-compulsive disorder. This is noteworthy because the features of obsessive-compulsive disorder may be conceived as having the most overlap with features of generalized anxiety disorder (e.g., pervasive worry versus obsessions, characterological presentation). Evidence for the distinguishability of generalized anxiety disorder and obsessive-compulsive disorder was obtained by Brown et al. (11), who contrasted 46 patients with generalized anxiety disorder and 31 patients with obsessive-compulsive disorder on the basis of data obtained through interviews with the Anxiety Disorders Interview Schedule—Revised (12) and questionnaires. Of the 55% of the subjects who received two independent interviews, in no case did one interviewer assign a principal diagnosis of obsessive-compulsive disorder and the other assign a diagnosis of generalized anxiety disorder, which strongly suggests that choosing between these two diagnoses was not a difficult differential diagnostic decision. Moreover, examination of comorbidity patterns indicated that generalized anxiety disorder and obsessive-compulsive disorder rarely co-occurred (patients with obsessive-compulsive disorder plus generalized anxiety disorder, 7%; patients with generalized anxiety disorder with additional obsessive-compulsive disorder, 2%).

#### *Age at Onset*

Although not part of the formal diagnostic criteria for generalized anxiety disorder, another potentially discriminating feature of the disorder is age at onset. Indeed, it has been found consistently that, on the whole, generalized anxiety disorder is associated with an earlier and more gradual onset than most other anxiety disorders (3, 13–18). This pattern of findings has influenced the aforementioned conceptualizations of generalized anxiety disorder (1, 10, 19) as representing a characterological disorder whose processes may serve as vulnerability factors in the development of a wide variety of emotional disorders (20–24).

Nevertheless, whereas the majority of patients with generalized anxiety disorder report an early age at onset (i.e., before the age of 20), a substantial minority of patients report an onset in adulthood. Although the data are preliminary at the present time, early- versus late-onset generalized anxiety disorder may be discriminable on the basis of a number of features. For example, R. Hoehn-Saric et al. (unpublished 1991 manuscript) found that, relative to patients with a late onset, patients reporting an early onset of generalized anxiety disorder were more likely to be female and that more of them reported a history of childhood fears and inhibition, prior psychiatric conditions, and marital or sexual disturbances. Patients with an onset in adulthood were significantly more likely to report that their generalized anxiety disorder developed after a stressful life event. Thus, in addition to the largest subgroup of patients with generalized anxiety disorder, whose disorder reflects a characterological pattern, a siz-

able minority of patients may develop generalized anxiety disorder in a manner consistent with the prototypical definition of an axis I disorder (i.e., relatively rapid onset following a stressful life event). Further research is needed to corroborate these initial observations. In addition, future research should more closely examine whether age at onset is predictive of response to treatment.

#### *Familial Transmission*

Data from family and twin studies have provided mixed support for the validity of generalized anxiety disorder; some studies have shown a familial aggregation (15, 16, 25), and others have not (21, 26). However, interpretation of these collective findings is difficult because of the substantial differences in methods (e.g., blindness of interviewers, interview type, subject selection) and definitions of the disorder (e.g., "anxiety neurosis," DSM-III, DSM-III-R) among studies.

Findings from two studies indicate that DSM-III generalized anxiety disorder is discriminable from panic disorder on the basis of the familial aggregation of the two disorders (15, 16). In the Noyes et al. study (15), the findings revealed a higher frequency of generalized anxiety disorder among first-order relatives of probands with generalized anxiety disorder than among relatives of nonanxious comparison probands and probands with panic disorder or panic disorder with agoraphobia. In addition, the high frequency of panic disorder and panic disorder with agoraphobia among the relatives of probands with panic disorder or panic disorder with agoraphobia, respectively, was not observed in the families of the probands with generalized anxiety disorder, indicating specificity in the patterns of these aggregations. These data should be interpreted cautiously since the diagnoses were not established blindly and the numbers of subjects were small (e.g., 20 probands with generalized anxiety disorder). Nonetheless, in a more recent study, Noyes et al. (16) replicated these familial aggregation differences when using larger groups of subjects with generalized anxiety disorder (N=41) and panic disorder (N=71) who had been diagnosed by means of the DSM-III-R criteria and the Structured Clinical Interview for DSM-III-R (27).

The authors of a recently published study of 1,033 blindly assessed female-female twin pairs from a population-based registry concluded that generalized anxiety disorder is a moderately familial disorder, with a heritability calculated to be around 30% (25). However, the results were somewhat counter to prediction in that the evidence for heritability was stronger and more consistent when generalized anxiety disorder was diagnosed by using a 1-month duration than when a 6-month duration was the criterion. For the 1-month duration criterion, the results clearly suggested that the heritability of generalized anxiety disorder was not due to comorbidity with major depression or panic disorder. By using the 6-month duration criterion, the results were considerably less clear, probably because of the small numbers of affected twins. These findings were

tempered further by the fact that the authors used an older version of a structured interview. Consequently, although the diagnosis of generalized anxiety disorder was based largely on DSM-III-R criteria, the requirement that "worry affected two or more life circumstances" was not assessed (25, p. 268). Two previous twin studies examining DSM-III generalized anxiety disorder failed to demonstrate conclusively the role of genetic factors in generalized anxiety disorder (26, 28).

#### *Comorbidity and Other Boundary Issues*

One of the primary concerns raised about the validity of the diagnosis of generalized anxiety disorder is the fact that it is associated with high rates of comorbidity, as both a principal diagnosis and an additional diagnosis. For instance, Brown and Barlow (6) found that 82% of patients with a principal diagnosis of generalized anxiety disorder had at least one additional diagnosis. This high rate of comorbidity is another factor that lowers the diagnostic reliability of generalized anxiety disorder; pure generalized anxiety disorder seems to be relatively rare. Consequently, diagnosticians must frequently determine whether patients' presenting symptoms warrant a separate diagnosis of generalized anxiety disorder, as opposed to being associated symptoms of the co-occurring condition(s).

Accordingly, some researchers involved in the DSM-IV process have interpreted the comorbidity findings to indicate that, diagnostically, it would be more parsimonious to subsume generalized anxiety disorder under the conditions with which it co-occurs. However, this position may be flawed in a number of ways. On a practical note, adopting this position would result in the loss of coverage in the diagnostic system of a substantial number of patients who are assigned generalized anxiety disorder without any additional diagnoses (approximately 20%–26% in some clinics). Moreover, it is a consistent finding in cross-sectional comorbidity studies that roughly 50% of patients with a principal anxiety disorder have at least one additional diagnosis; many principal diagnoses, in addition to generalized anxiety disorder, have comorbidity rates well above this figure (e.g., 73% of patients with a principal DSM-III-R diagnosis of panic disorder with severe agoraphobia are assigned at least one additional diagnosis) (6). Thus, high comorbidity rates among the DSM-III-R anxiety disorders are not unique to the diagnosis of generalized anxiety disorder.

It is interesting that the clinical features of several of the diagnoses that most frequently co-occur with generalized anxiety disorder ostensibly possess little overlap with the features of generalized anxiety disorder. For example, in the studies by Brown and Barlow (6) and Brawman-Mintzer et al. (7), the most commonly occurring additional diagnosis in patients with generalized anxiety disorder was social phobia (29% and 23%, respectively), a diagnosis infrequently involving chronic anxiety and worry except in the cases of patients with severe generalized social phobia. In the study

generalized anxiety disorder with the prototypical relatively rapid onset. Further research is needed on the diagnosis. In addition, future research should examine whether age affects the course of treatment.

These findings have provided support for the validity of the diagnosis of generalized anxiety disorder as a familial aggregation (21, 26). However, the findings are not definitive. Differences in methods (interview type, subject characteristics, e.g., "anxiety disorder" vs. "anxiety disorder studies") may account for the findings.

The DSM-III-R diagnosis of generalized anxiety disorder is distinguishable from panic disorder by the absence of aggregation of the symptoms and the absence of generalized anxiety disorder in relatives of probands and probands with agoraphobia and panic disorder. The absence of generalized anxiety disorder in relatives of probands with agoraphobia and panic disorder was not observed in the study by Brown et al. (6). The absence of generalized anxiety disorder in relatives of probands with agoraphobia and panic disorder was not observed in the study by Brown et al. (6). The absence of generalized anxiety disorder in relatives of probands with agoraphobia and panic disorder was not observed in the study by Brown et al. (6).

Nonetheless, the study by Brown et al. (6) replicated these findings when using larger samples of patients with generalized anxiety disorder and the Structured Clinical Interview (SCID) (27). The study of 1,033 twin pairs from a population-based study of generalized anxiety disorder, with a prevalence of 30% (25). However, the study did not meet the criteria for prediction of generalized anxiety disorder was stronger and more specific than when a diagnosis of generalized anxiety disorder was not due to panic disorder or panic disorder. For the 1-month prevalence study, the results suggested that the prevalence of generalized anxiety disorder was not due to panic disorder or panic disorder. For the 1-month prevalence study, the results suggested that the prevalence of generalized anxiety disorder was not due to panic disorder or panic disorder. For the 1-month prevalence study, the results suggested that the prevalence of generalized anxiety disorder was not due to panic disorder or panic disorder.

tempered further by the fact that the authors used an older version of a structured interview. Consequently, although the diagnosis of generalized anxiety disorder was based largely on DSM-III-R criteria, the requirement that "worry affected two or more life circumstances" was not assessed (25, p. 268). Two previous twin studies examining DSM-III generalized anxiety disorder failed to demonstrate conclusively the role of genetic factors in generalized anxiety disorder (26, 28).

#### *Comorbidity and Other Boundary Issues*

One of the primary concerns raised about the validity of the diagnosis of generalized anxiety disorder is the fact that it is associated with high rates of comorbidity, as both a principal diagnosis and an additional diagnosis. For instance, Brown and Barlow (6) found that 82% of patients with a principal diagnosis of generalized anxiety disorder had at least one additional diagnosis. This high rate of comorbidity is another factor that lowers the diagnostic reliability of generalized anxiety disorder; pure generalized anxiety disorder seems to be relatively rare. Consequently, diagnosticians must frequently determine whether patients' presenting symptoms warrant a separate diagnosis of generalized anxiety disorder, as opposed to being associated symptoms of the co-occurring condition(s).

Accordingly, some researchers involved in the DSM-IV process have interpreted the comorbidity findings to indicate that, diagnostically, it would be more parsimonious to subsume generalized anxiety disorder under the conditions with which it co-occurs. However, this position may be flawed in a number of ways. On a practical note, adopting this position would result in the loss of coverage in the diagnostic system of a substantial number of patients who are assigned generalized anxiety disorder without any additional diagnoses (approximately 20%–26% in some clinics). Moreover, it is a consistent finding in cross-sectional comorbidity studies that roughly 50% of patients with a principal diagnosis of generalized anxiety disorder have at least one additional diagnosis; many principal diagnoses, in addition to generalized anxiety disorder, have comorbidity rates well above this figure (e.g., 73% of patients with a principal DSM-III-R diagnosis of panic disorder with severe agoraphobia are assigned at least one additional diagnosis) (6). Thus, high comorbidity rates among the DSM-III-R anxiety disorders are not unique to the diagnosis of generalized anxiety disorder.

It is interesting that the clinical features of several of the diagnoses that most frequently co-occur with generalized anxiety disorder ostensibly possess little overlap with the features of generalized anxiety disorder. For example, in the studies by Brown and Barlow (6) and Brawman-Mintzer et al. (7), the most commonly occurring additional diagnosis in patients with generalized anxiety disorder was social phobia (29% and 23%, respectively), a diagnosis infrequently involving chronic anxiety and worry except in the cases of patients with severe generalized social phobia. In the study

by Noyes et al. (16), the most frequent additional diagnosis was simple phobia, which was given to 32% of the patients (21% in the study by Brawman-Mintzer et al.). It would seem erroneous to subsume generalized anxiety disorder under these commonly co-occurring diagnoses. On the other hand, comorbidity findings indicate that generalized anxiety disorder is not highly likely to co-occur with diagnoses associated with potentially overlapping features (e.g., obsessive-compulsive disorder). Indeed, several studies indicate that obsessive-compulsive disorder and generalized anxiety disorder infrequently co-occur (6, 7, 11).

With regard to the mood disorders, Brown and Barlow (6) noted that 18% and 11% of patients with generalized anxiety disorder had an additional diagnosis of dysthymia and major depression, respectively. Thus, the majority (71%) of patients with generalized anxiety disorder in this study had symptoms that could not be subsumed under an affective disorder. In addition, Noyes et al. (16) noted that major depression co-occurred significantly less frequently in patients with generalized anxiety disorder than in patients with panic disorder. However, these observations are tempered by the findings from two recent studies that yielded higher rates of comorbid major depression and generalized anxiety disorder: 46% in a study by Massion et al. (9) and 34% in a study by Noyes et al. (16). Moreover, it should be noted that the rates of comorbid generalized anxiety disorder, major depression, and dysthymia were calculated on the basis of DSM-III-R criteria, which state that generalized anxiety disorder should not be diagnosed if the disturbance occurs "only during the course of a Mood Disorder." Thus, the possibility exists that the comorbidity rates for generalized anxiety disorder and the mood disorders would be much higher if this diagnostic hierarchy rule had been omitted in these studies.

Another difficulty with the position that generalized anxiety disorder could be subsumed under other diagnoses is the fact that this argument discounts findings pertaining to temporal sequence and the fact that generalized anxiety disorder often has an earlier onset than many of the disorders with which it frequently co-occurs (e.g., panic disorder). Accordingly, findings of high comorbidity could be interpreted in a fashion noted earlier, as meaning that the features of generalized anxiety disorder may increase vulnerability to the subsequent development of these co-occurring conditions. Further research examining the longitudinal course and/or lifetime prevalence of disorders is needed to corroborate this assertion.

Another important issue is the clarification of the boundary between generalized anxiety disorder and the patients' clinical symptoms of anxiety and depression that seem to be severe enough to warrant a diagnosis but do not reach the threshold for generalized anxiety disorder for various reasons (e.g., lower severity ratings, insufficient number of symptoms, presence of somatic symptoms without excessive worry). Whereas initial observations indicated that these subthreshold

cases are prevalent in primary care settings, until recently it was speculated that a substantial proportion of these cases might meet the diagnostic threshold for established diagnoses, such as generalized anxiety disorder and dysthymia, under conditions of more rigorous, structured evaluation. Accordingly, as part of the DSM-IV process, a field trial examined the presenting symptoms in these patients (29). In addition to determining whether these cases were indeed subthreshold on the basis of structured interviewing, the field trial addressed such issues as the prevalence of this presentation and the extent to which depressive symptoms occurred.

Results from that study (29) indicated that cases with affective symptoms that are subthreshold with respect to DSM-III-R anxiety or depressive disorders but present substantial functional impairment or distress do appear to exist and are relatively common. However, close examination indicates that these cases differ in a number of important ways from those meeting the criteria for DSM-III-R generalized anxiety disorder or a DSM-III-R mood disorder. Basically, patients with these conditions had neither the pure depressive symptoms nor the pure anxiety symptoms that form the core of one or the other major set of disorders (based on factor analyses). Profile analyses comparing these patients with patients who had anxiety or mood disorders also revealed significant differences on the major factors of anxiety, depression, negative affect, and physiological symptoms. Because these patients had very homogeneous presentations, with symptoms comprising the superordinate factor of negative affect without a predominance or clear pattern of pure anxiety or depressive symptoms, the most satisfactory solution would be not to force their conditions into either anxiety or mood disorders but, rather, to identify them, in a preliminary way, as a separate category of "mixed anxiety-depression."

#### *Response to Treatment*

Although there are inherent difficulties in attempting to validate a diagnostic entity on the basis of its response to treatment, it is interesting that patients with generalized anxiety disorder have tended to respond less favorably to conventional cognitive-behavioral treatments than have patients with other anxiety disorders, such as panic disorder (30, 31). In the majority of outcome studies conducted thus far, the treatments examined have been relatively nonspecific (e.g., relaxation training, cognitive restructuring); that is, unlike treatments for other anxiety disorders that have been found to be highly effective (e.g., treatments for panic disorder, social phobia, obsessive-compulsive disorder), the treatments examined in many of these studies have not contained components tailored to address disorder-specific key features (e.g., excessive worry). Although a lower level of diagnostic reliability may certainly be a contributory factor, perhaps it is partly because of the lower degree of treatment specificity that

few comparative outcome studies of generalized anxiety disorder have shown differences in the effectiveness of active treatment conditions (32). However, more recent evidence from single-case studies, although preliminary, indicates that newly developed interventions designed specifically to target the worry associated with generalized anxiety disorder may be effective in the treatment of generalized anxiety disorder (33, 34). An important issue awaiting future research is whether highly specialized treatments produce gains over the modest improvements achieved by the less specific treatments that have been evaluated to date.

A large number of studies suggest that pharmacological treatments, particularly the benzodiazepines, are effective for generalized anxiety disorder, although these results are typically relatively weak and short-lived (35). Nevertheless, as many as 40% of patients achieve a remission of symptoms. More recently, however, reports have indicated a lack of differences between drug and placebo in studies examining the pharmacological treatment of generalized anxiety disorder. This is an interesting and important issue that deserves further consideration. Swinson et al. (36) reviewed 39 studies involving pharmacological treatment of generalized anxiety disorder. The most frequently investigated drugs were buspirone (41%) and diazepam (36%). The most common assessment measure was the Hamilton Anxiety Rating Scale. Structured interviews were used in only 20% of the studies; the reports on the majority of studies referred only to some type of unspecified "clinical interview." Swinson et al. concluded that, given the difficulty in diagnosing generalized anxiety disorder, many of the studies that did not use structured interviews might have included a heterogeneous mix of patients with vague symptoms of anxiety and depression. Hence, the authors strongly recommended careful assessment of these patients with structured interviews to clearly identify generalized anxiety disorder.

In addition, recent reports indicate that differences between drug and placebo for generalized anxiety disorder seem to be easier to find in primary care settings (L.D. Bradford, personal communication, 1992; K. Rickels, personal communication, 1992). Lower rates of response to placebo are also found in these settings. The reasons for these discrepancies are not clear. In summary, clarification of treatment response issues awaits future investigation that uses more precise methods and clearer identification of patients.

#### RELIABILITY AND VALIDITY OF DIAGNOSTIC FEATURES

Despite the fact that the diagnostic reliability of generalized anxiety disorder is lower than that of other anxiety disorders, the features constituting the diagnostic criteria for generalized anxiety disorder have been found to be reliable. For instance, several studies have shown that the content and presence of the spheres of worry involved in generalized anxiety disorder

can be identified reliably (18, 37-39). Findings from initial studies have indicated that, whereas ratings of the individual symptoms constituting the associated symptom criterion for generalized anxiety disorder are unreliable (37, 40), algorithms involving symptom areas or groups of symptoms (e.g., interrater agreement on the identification of six or more symptoms) can evidence good reliability (P.A. DiNardo, unpublished 1991 manuscript).

Nevertheless, a recently completed study indicated that the majority of the individual symptom ratings can be established reliably. In this study (41), the interrater reliability and endorsement rates for the 18 associated symptoms were calculated from interview-based ratings of 204 patients with generalized anxiety disorder at four sites. The data on interrater reliability indicated that 16 of the 18 symptoms evidenced agreement at a level greater than chance (dizziness and trembling were the exceptions). Despite the use of different sites and interviews, significant Spearman correlations ranging from 0.69 to 0.94 revealed marked consistency in the rates of symptom endorsement across sites. Interestingly, the most reliable and most frequently endorsed symptoms corresponded to all of those listed in the vigilance and scanning cluster and most of the symptoms of the motor tension cluster of DSM-III-R; none of the autonomic hyperactivity symptoms met these reliability and endorsement criteria.

Although these data indicate that the spheres of worry associated with generalized anxiety disorder and the majority of the associated symptom ratings can be established reliably, the ability of these features to differentiate patients with generalized anxiety disorder from other patient and nonpatient groups must be considered as well. Studies examining the nature of worry in patients with generalized anxiety disorder and nonanxious comparison subjects (38, 39) have produced findings indicating that, although these groups do not differ substantially in the content of their worries, there are considerable differences in measures reflecting controllability and pervasiveness of the worry process (e.g., percentage of the day involved in worrying, frequency of unprecipitated worry, self-perceptions of controllability and realism of worry, number of worry topics). In addition, whereas 100% of patients with generalized anxiety disorder in a recent study (T.D. Borkovec, unpublished 1992 manuscript) reported experiencing their worry as uncontrollable and interfering with attention, few nonanxious comparison subjects reported these measures of worry (0% and 15%, respectively).

Although the data are limited, particularly with regard to between-group comparisons of controllability of the worry process; indexes of this nature appear to differentiate patients with generalized anxiety disorder from other anxiety disorder groups. For example, Sanderson and Barlow (18) found that a greater proportion of patients with generalized anxiety disorder than patients with other anxiety disorders (social phobia, panic disorder, simple phobia, obsessive-compulsive disorder

of generalized anxiety in the effectiveness. However, more studies, although predeveloped interventions worry associated with be effective in the disorder (33, 34). An research is whether duce gains over the by the less specific d to date.

that pharmacologicalodiazepines, are effective, although these are weak and short-lived. Most patients achieve recently, however, differences between drug the pharmacological order. This is an issue deserves further considered 39 studies inent of generalized recently investigated clonazepam (36%). The was the Hamilton interviews were used parts on the majority type of unspecified l. concluded that, generalized anxiety l not use structured heterogeneous mix of anxiety and depression. Recommended careful structured interviews by disorder.

note that differences in generalized anxiety disorder in primary care settings (Klerman, 1992; Klerman, 1992). Lower rates in these settings. are not clear. In at response issues more precise methods.

## DIAGNOSTIC

reliability of general than that of other constituting the diagnosis of anxiety disorder have been. Several studies in the presence of the generalized anxiety disorder

der can be identified reliably (18, 37-39). Findings from initial studies have indicated that, whereas ratings of the individual symptoms constituting the associated symptom criterion for generalized anxiety disorder are unreliable (37, 40), algorithms involving symptom areas or groups of symptoms (e.g., interrater agreement on the identification of six or more symptoms) can evidence good reliability (P.A. DiNardo, unpublished 1991 manuscript).

Nevertheless, a recently completed study indicated that the majority of the individual symptom ratings can be established reliably. In this study (41), the interrater reliability and endorsement rates for the 18 associated symptoms were calculated from interview-based ratings of 204 patients with generalized anxiety disorder at four sites. The data on interrater reliability indicated that 16 of the 18 symptoms evidenced agreement at a level greater than chance (dizziness and trembling were the exceptions). Despite the use of different sites and interviews; significant Spearman correlations ranging from 0.69 to 0.94 revealed marked consistency in the rates of symptom endorsement across sites. Interestingly, the most reliable and most frequently endorsed symptoms corresponded to all of those listed in the vigilance and scanning cluster and most of the symptoms of the motor tension cluster of DSM-III-R; none of the autonomic hyperactivity symptoms met these reliability and endorsement criteria.

Although these data indicate that the spheres of worry associated with generalized anxiety disorder and the majority of the associated symptom ratings can be established reliably, the ability of these features to differentiate patients with generalized anxiety disorder from other patient and nonpatient groups must be considered as well. Studies examining the nature of worry in patients with generalized anxiety disorder and nonanxious comparison subjects (38, 39) have produced findings indicating that, although these groups do not differ substantially in the content of their worries, there are considerable differences in measures reflecting controllability and pervasiveness of the worry process (e.g., percentage of the day involved in worrying, frequency of unprecipitated worry, self-perceptions of controllability and realism of worry, number of worry topics). In addition, whereas 100% of patients with generalized anxiety disorder in a recent study (T.D. Borkovec, unpublished 1992 manuscript) reported experiencing their worry as uncontrollable and interfering with attention, few nonanxious comparison subjects reported these measures of worry (0% and 15%, respectively).

Although the data are limited, particularly with regard to between-group comparisons of controllability of the worry process, indexes of this nature appear to differentiate patients with generalized anxiety disorder from other anxiety disorder groups. For example, Sanderson and Barlow (18) found that a greater proportion of patients with generalized anxiety disorder than patients with other anxiety disorders (social phobia, panic disorder, simple phobia, obsessive-compulsive disorder)

reported worrying excessively over minor matters. In a similar analysis, DiNardo (unpublished 1991 manuscript) examined the discriminatory power of the item "Do you worry excessively about minor matters?" from the Anxiety Disorders Interview Schedule—Revised by comparing the frequencies of affirmative responses to this question by patients with generalized anxiety disorder and patients with other anxiety disorders. The positive predictive power of this question was 0.36 (the probability of a generalized anxiety disorder diagnosis, given an affirmative response); the negative predictive power was 0.94 (the probability of not having a generalized anxiety disorder diagnosis, given a negative response). These findings indicate that, although an affirmative response to the question about excessive worry over minor matters cannot confirm a diagnosis of generalized anxiety disorder, a negative response can rule out generalized anxiety disorder with confidence. Recent supporting evidence was provided by the unpublished study by Borkovec, who found that patients with generalized anxiety disorder could be differentiated from other anxiety disorder groups by the "Do you worry excessively about minor matters?" item from the Anxiety Disorders Interview Schedule—Revised (generalized anxiety disorder, 93%; other anxiety disorders, 32%-71%). Moreover, Borkovec found that patients with generalized anxiety disorder experienced a significantly greater degree of life interference associated with their worry than did patients with other anxiety disorders.

Differences in responses to these items (i.e., excessive worry over minor matters, percentage of day involved in worrying) have been replicated in a study comparing patients with generalized anxiety disorder to patients with obsessive-compulsive disorder (11). Moreover, in at least three studies (11, 42, 43), patients with generalized anxiety disorder had significantly higher scores than other anxiety disorder groups (including patients with obsessive-compulsive disorder) and normal comparison subjects on the newly developed Penn State Worry Questionnaire, a psychometrically validated measure of the trait of worry.

Data concerning the discriminant validity of the 18 symptoms constituting the associated symptom criterion of generalized anxiety disorder in DSM-III-R are relatively sparse. The few studies addressing this issue have produced converging evidence of the low rate of endorsement of autonomic symptoms by patients with generalized anxiety disorder on diagnostic interviews (13, 16, 41). In fact, a potential discriminating feature of generalized anxiety disorder is the observation that patients with generalized anxiety disorder respond to psychological stress with autonomic inflexibility; that is, relative to nonanxious comparison subjects, patients with generalized anxiety disorder show less variability in autonomic responses (e.g., heart rate, skin conductance) to laboratory-based psychological challenges (44-46).

The one laboratory-based measure that has been found (45) to differentiate patients with generalized

anxiety disorder from nonanxious comparison subjects at baseline and in response to psychological challenge is muscle tension (i.e., increased frontalis and gastrocnemius electromyogram activity). Indeed, this finding parallels recent data obtained through self-report measures (questionnaires, interviews) indicating that symptoms of motor and psychic tension (e.g., muscle tension, irritability, feeling keyed up or on edge) are the most frequently reported by patients with generalized anxiety disorder (41). In fact, preliminary evidence attesting to the discriminant validity of these symptoms was the finding by Brown et al. (42) that patients with generalized anxiety disorder were differentiated from all other DSM-III-R anxiety disorder groups except patients with obsessive-compulsive disorder on the basis of their scores on the tension subscale of the Self-Analysis Questionnaire, a measure of current (past week) symptoms. Examination of the tension subscale reveals that many of the items correspond to symptoms from the vigilance and scanning cluster and the motor tension cluster of the DSM-III-R symptom criterion for generalized anxiety disorder. Moreover, analysis of the convergent validity of the Penn State Worry Questionnaire indicated that, for the subjects with generalized anxiety disorder, this measure was significantly correlated with the tension subscale of the Self-Analysis Questionnaire but not the anxiety and depression subscales. In an earlier study (43), the Penn State Worry Questionnaire was also not found to be correlated with measures of anxiety or depression (i.e., Hamilton scales, Beck Depression Inventory) in a group of patients with generalized anxiety disorder. In a recent study of 292 patients with anxiety or mood disorders (T.A. Brown et al., unpublished 1994 manuscript), symptom ratings from the motor tension cluster and the vigilance and scanning cluster were more strongly correlated with measures of generalized anxiety disorder (e.g., Penn State Worry Questionnaire, ratings of clinical severity of generalized anxiety disorder) than were ratings of symptoms from the autonomic hyperactivity cluster. Collectively, such findings support the revision of the associated symptom list in DSM-IV, which reduces the number of symptoms from 18 (DSM-III-R) to six (appendix 1).

#### ISSUES PERTAINING TO DSM-IV

For the reasons articulated in the preceding, the DSM-IV Anxiety Disorders Work Group ultimately recommended the continued placement of generalized anxiety disorder within the anxiety disorders, with revisions to the criteria set. The DSM-IV diagnostic criteria for generalized anxiety disorder are listed in appendix 1. Some of the more substantial revisions to these criteria, as guided by the data reviewed here, include the increased emphasis on the uncontrollability aspect of worry (criterion B) and the reduction of the associated symptom criterion (criterion C) to six symptoms (largely through the elimination of symptoms formerly constituting the autonomic hyperactivity cluster in DSM-III-R).

Although generalized anxiety disorder has been retained in DSM-IV, researchers should be aware that there are a number of unresolved issues surrounding the empirical basis for the diagnosis. The difficulties include the problems with diagnostic unreliability shown by recent studies using the DSM-III-R criteria. The kappa coefficients have been only in the fair range, which, interestingly, is more characteristic of personality disorders than other anxiety disorders. It is possible that the DSM-IV definitions may improve reliability, but there is no evidence yet that this will happen.

Second, generalized anxiety disorder as a principal diagnosis has been associated with extremely high rates of comorbidity. Whereas some additional diagnoses associated with generalized anxiety disorder (such as simple phobia) seem unrelated, the possibility remains that generalized anxiety disorder may be better conceptualized as a vulnerability to developing additional anxiety and, perhaps, mood disorders. In other words, in view of the seemingly earlier age at onset for this diagnosis than for other anxiety and mood disorders, generalized anxiety disorder, along with perhaps dysthymia and mixed anxiety-depression, may well be better conceptualized as a trait or, as already noted, a general vulnerability.

Moreover, the difficulties that have been encountered with the validation of generalized anxiety disorder could be considered on a larger scale, namely, the validity of the DSM-III-R and DSM-IV classification systems for anxiety and mood disorders. Indeed, many researchers (47, 48) have raised the possibility that these classification systems are erroneously distinguishing phenomena on the basis of differing manifestations of a common pathophysiology. Evidence that is frequently offered in support of this argument includes findings that a variety of disorders respond favorably to antidepressant medication (47) and data relating to many of the issues raised in the present paper, such as high comorbidity and difficulties in differentiating the symptoms of anxiety and depression. Whereas more study of the biological commonalities and differences among the anxiety and mood disorders is needed (49), a substantial literature attesting to the distinct familial transmission of many of these disorders (e.g., panic disorder, simple phobia, social phobia) could be taken in support of the DSM nosology (50-52). In addition, findings suggesting that the anxiety and mood disorders respond similarly to pharmacological treatment could be considered tentative in the context of findings indicating distinctiveness in therapeutic response (53, 54).

On the other hand, generalized anxiety disorder at the syndromal level seems to be associated with relatively high levels of construct validity. That is, generalized anxiety disorder can be separated reasonably well from other anxiety disorders by means of psychometric evaluation. As with the other anxiety disorders, generalized anxiety disorder can be differentiated from major depression on the basis of its relative absence of anhedonia and low positive-affect (31, 55). The alterations in criteria for DSM-IV seem to have provided relatively

firm boundaries with other anxiety disorders, as well as a threshold between this diagnosis and the absence of mental disorder. Moreover, the creation of new categories in DSM-IV that reflect subsyndromal disorders (e.g., mixed anxiety-depression, minor depression) may further augment the boundary for generalized anxiety disorder by providing a diagnosis for patients whose conditions lacked formal diagnostic coverage in DSM-III-R and who may have potentially diluted the generalized anxiety disorder category. In addition, some new data from family studies seem to support the criterion validity of generalized anxiety disorder, although these data are still relatively limited. Differences in age at onset and treatment response also point to a different kind of entity.

Perhaps the most interesting and substantial development has been the determination, now rather widely replicated, of a set of somatic symptoms associated with generalized anxiety disorder that is very different from those for other DSM-III-R anxiety disorders, such as panic disorder. The identification by diverse investigative groups of a core of somatic symptoms, formally found in the motor tension cluster and the vigilance and scanning cluster of the DSM-III-R associated symptom criterion, may well identify a truly unique syndrome that would have implications for the development of new and more effective pharmacological treatments.

Nonetheless, an important consequence of the process of evaluating and revising the diagnostic criteria for DSM-IV has been the explication and clarification of a variety of issues and lacunae in the empirical evidence on the nature and classification of disorders. Accordingly, in light of the issues discussed here, the DSM-IV criteria for generalized anxiety disorder should be heralded mainly for their heuristic value, as opposed to being viewed as a last statement on the nature of this disorder.

#### REFERENCES

1. Barlow DH: Anxiety and Its Disorders: The Nature and Treatment of Anxiety and Panic. New York, Guilford Press, 1988
2. Barlow DH, Blanchard EB, Vermilyea JA, Vermilyea BB, DiNardo PA: Generalized anxiety and generalized anxiety disorder: description and reconceptualization. *Am J Psychiatry* 1986; 143: 40-44
3. Barlow DH, DiNardo PA, Vermilyea BB, Vermilyea JA, Blanchard EB: Co-morbidity and depression among the anxiety disorders: issues in diagnosis and classification. *J Nerv Ment Dis* 1986; 174:63-72
4. DiNardo P, Moras K, Barlow DH, Rapee RM, Brown TA: Reliability of DSM-III-R anxiety disorder categories: using the Anxiety Disorders Interview Schedule—Revised (ADIS-R). *Arch Gen Psychiatry* 1993; 50:251-256
5. Mannuzza S, Fyer AJ, Martin MS, Gallops MS, Endicott J, Gorman JM, Liebowitz MR, Klein DF: Reliability of anxiety assessment, I: diagnostic agreement. *Arch Gen Psychiatry* 1989; 46: 1093-1101
6. Brown TA, Barlow DH: Comorbidity among anxiety disorders: implications for treatment and DSM-IV. *J Consult Clin Psychol* 1992; 60:835-844
7. Brawman-Mintzer O, Lydiard RB, Emmanuel N, Payeur R, Johnson M, Roberts J, Jarrell MP, Ballenger JC: Psychiatric co-

order has been re-  
ould be aware that  
es surrounding the  
The difficulties in-  
unreliability shown  
III-R criteria. The  
in the fair range,  
eristic of personal-  
orders. It is possible  
improve reliability,  
will happen.

order as a principal  
th extremely high  
ne additional diag-  
anxiety disorder  
ted, the possibility  
order may be bet-  
y to developing ad-  
ood disorders. In  
ngly earlier age at  
other anxiety and  
ty disorder, along  
ed anxiety-depres-  
zed as a trait or, as  
fy.

been encountered  
anxiety disorder  
namely, the valid-  
classification systems  
Indeed, many re-  
possibility that these  
sly distinguishing  
manifestations of  
e that is frequently  
includes findings  
avorably to antide-  
elating to many of  
f, such as high co-  
ntiating the symp-  
reas more study of  
erences among the  
d (49), a substan-  
familial transmis-  
g., panic disorder,  
e taken in support  
addition, findings  
disorders respond  
ent could be con-  
ndings indicating  
e (53, 54).

anxiety disorder at  
ociated with rela-  
. That is, general-  
d reasonably well  
s of psychometric  
disorders, gener-  
tiated from major  
absence of anhe-  
(. The alterations  
rovided relatively

firm boundaries with other anxiety disorders, as well as a threshold between this diagnosis and the absence of mental disorder. Moreover, the creation of new categories in DSM-IV that reflect subsyndromal disorders (e.g., mixed anxiety-depression, minor depression) may further augment the boundary for generalized anxiety disorder by providing a diagnosis for patients whose conditions lacked formal diagnostic coverage in DSM-III-R and who may have potentially diluted the generalized anxiety disorder category. In addition, some new data from family studies seem to support the criterion validity of generalized anxiety disorder, although these data are still relatively limited. Differences in age at onset and treatment response also point to a different kind of entity.

Perhaps the most interesting and substantial development has been the determination, now rather widely replicated, of a set of somatic symptoms associated with generalized anxiety disorder that is very different from those for other DSM-III-R anxiety disorders, such as panic disorder. The identification by diverse investigative groups of a core of somatic symptoms, formally found in the motor tension cluster and the vigilance and scanning cluster of the DSM-III-R associated symptom criterion, may well identify a truly unique syndrome that would have implications for the development of new and more effective pharmacological treatments.

Nonetheless, an important consequence of the process of evaluating and revising the diagnostic criteria for DSM-IV has been the explication and clarification of a variety of issues and lacunae in the empirical evidence on the nature and classification of disorders. Accordingly, in light of the issues discussed here, the DSM-IV criteria for generalized anxiety disorder should be heralded mainly for their heuristic value, as opposed to being viewed as a last statement on the nature of this disorder.

## REFERENCES

1. Barlow DH: Anxiety and Its Disorders: The Nature and Treatment of Anxiety and Panic. New York, Guilford Press, 1988
2. Barlow DH, Blanchard EB, Vermilyea JA, Vermilyea BB, DiNardo PA: Generalized anxiety and generalized anxiety disorder: description and reconceptualization. *Am J Psychiatry* 1986; 143:40-44
3. Barlow DH, DiNardo PA, Vermilyea BB, Vermilyea JA, Blanchard EB: Co-morbidity and depression among the anxiety disorders: issues in diagnosis and classification. *J Nerv Ment Dis* 1986; 174:63-72
4. DiNardo P, Moras K, Barlow DH, Rapee RM, Brown TA: Reliability of DSM-III-R anxiety disorder categories: using the Anxiety Disorders Interview Schedule—Revised (ADIS-R). *Arch Gen Psychiatry* 1993; 50:251-256
5. Mannuzza S, Fyer AJ, Martin MS, Gallops MS, Endicott J, Gorman JM, Liebowitz MR, Klein DF: Reliability of anxiety assessment, I: diagnostic agreement. *Arch Gen Psychiatry* 1989; 46:1093-1101
6. Brown TA, Barlow DH: Comorbidity among anxiety disorders: implications for treatment and DSM-IV. *J Consult Clin Psychol* 1992; 60:835-844
7. Brawman-Mintzer O, Lydiard RB, Emmanuel N, Payeur R, Johnson M, Roberts J, Jarrell MP, Ballenger JC: Psychiatric co-

8. Sanderson WC, Beck AT, Beck J: Syndrome comorbidity in patients with major depression or dysthymia: prevalence and temporal relationships. *Am J Psychiatry* 1990; 147:1025-1028
9. Massion AO, Warshaw MG, Keller MB: Quality of life and psychiatric morbidity in panic disorder and generalized anxiety disorder. *Am J Psychiatry* 1993; 150:600-607
10. Rapee RM: Generalized anxiety disorder: a review of clinical features and theoretical concepts. *Clin Psychol Rev* 1991; 11:419-440
11. Brown TA, Moras K, Zinbarg RE, Barlow DH: Diagnostic and symptom distinguishability of generalized anxiety disorder and obsessive-compulsive disorder. *Behav Ther* 1993; 24:227-240
12. DiNardo PA, Barlow DH: Anxiety Disorders Interview Schedule—Revised (ADIS-R). Albany, NY, Graywinds Publications, 1988
13. Anderson DJ, Noyes R Jr, Crowe RR: A comparison of panic disorder and generalized anxiety disorder. *Am J Psychiatry* 1984; 141:572-575
14. Cameron OG, Thyer BA, Nesse RM, Curtis GC: Symptom profiles of patients with DSM-III anxiety disorders. *Am J Psychiatry* 1986; 143:1132-1137
15. Noyes R Jr, Clarkson C, Crowe RR, Yates WR, McChesney CM: A family study of generalized anxiety disorder. *Am J Psychiatry* 1987; 144:1019-1024
16. Noyes R, Woodman C, Garvey MJ, Cook BL, Suelzer M, Clancy J, Anderson DJ: Generalized anxiety disorder vs panic disorder: distinguishing characteristics and patterns of comorbidity. *J Nerv Ment Dis* 1992; 180:369-379
17. Rapee RM: The distinction between panic disorder and generalized anxiety disorder: clinical presentation. *Aust NZ J Psychiatry* 1985; 19:227-232
18. Sanderson WC, Barlow DH: A description of patients diagnosed with DSM-III-R generalized anxiety disorder. *J Nerv Ment Dis* 1990; 178:588-591
19. Sanderson WC, Wetzler S: Chronic anxiety and generalized anxiety disorder: issues in comorbidity, in *Chronic Anxiety: Generalized Anxiety Disorder and Mixed Anxiety-Depression*. Edited by Rapee RM, Barlow DH. New York, Guilford Press, 1991
20. Breslau N, Davis GC: DSM-III generalized anxiety disorder: an empirical investigation of more stringent criteria. *Psychiatry Res* 1985; 14:231-238
21. Cloninger CR, Martin RL, Clayton P, Guze SB: A blind follow-up and family study of anxiety neurosis: preliminary analysis of the St Louis 500, in *Anxiety: New Research and Changing Concepts*. Edited by Klein DF, Rabkin JG. New York, Raven Press, 1981
22. Garvey MJ, Cook B, Noyes R: The occurrence of a prodrome of generalized anxiety in panic disorder. *Compr Psychiatry* 1988; 29:445-449
23. Nisita C, Petracca A, Akiskal HS, Galli L, Gepponi I, Cassano GB: Delimitation of generalized anxiety disorder: clinical comparisons with panic and major depressive disorders. *Compr Psychiatry* 1990; 31:409-415
24. Uhde TW, Boulenger JP, Roy-Byrne PP, Geraci MF, Vittone BJ, Post RM: Longitudinal course of panic disorder: clinical and biological considerations. *Prog Neuropsychopharmacol Biol Psychiatry* 1985; 9:39-51
25. Kendler KS, Neale MC, Kessler RC, Heath AC, Eaves LJ: Generalized anxiety disorder in women: a population-based twin study. *Arch Gen Psychiatry* 1992; 49:267-272
26. Torgersen S: Genetic factors in anxiety disorders. *Arch Gen Psychiatry* 1983; 40:1085-1089
27. Spitzer RL, Williams JBW, Gibbon M, First MB: Structured Clinical Interview for DSM-III-R (SCID). New York, New York State Psychiatric Institute, Biometrics Research, 1989
28. Andrews G, Stewart G, Allen R, Henderson AS: The genetics of six neurotic disorders: a twin study. *J Affect Disord* 1990; 19:23-29
29. Zinbarg RE, Barlow DH, Liebowitz M, Street L, Broadhead E, Katon W, Roy-Byrne P, Lepine J-P, Teherani M, Richards J, Brantley PJ, Kraemer H: The DSM-IV field trial for mixed anxiety-depression. *Am J Psychiatry* 1994; 151:1153-1162



30. Barlow DH, Craske MG, Cerny JA, Klosko JS: Behavioral treatment of panic disorder. *Behav Ther* 1989; 20:261-282
31. Barlow DH, Rapee RM, Brown TA: Behavioral treatment of generalized anxiety disorder. *Behav Ther* 1992; 23:551-570
32. Brown TA, Hertz RM, Barlow DH: New developments in cognitive-behavioral treatment of anxiety disorders, in *American Psychiatric Press Review of Psychiatry*, vol 11. Edited by Tasman A, Riba MB. Washington, DC, American Psychiatric Press, 1992
33. Brown TA, O'Leary TA, Barlow DH: Generalized anxiety disorder, in *Clinical Handbook of Psychological Disorders: A Step-by-Step Treatment Manual*, 2nd ed. Edited by Barlow DH. New York, Guilford Press, 1993
34. Craske MG, Barlow DH, O'Leary TA: *Mastery of Your Anxiety and Worry*. Albany, NY, Graywinds Publications, 1992
35. Schweitzer E, Rickels K: Pharmacotherapy of generalized anxiety disorder, in *Chronic Anxiety: Generalized Anxiety Disorder and Mixed Anxiety-Depression*. Edited by Rapee RM, Barlow DH. New York, Guilford Press, 1991
36. Swinson RP, Cox BJ, Fergus KD: Diagnostic criteria in generalized anxiety disorder treatment studies (letter). *J Clin Psychopharmacol* 1993; 13:455
37. Barlow DH, DiNardo PA: The diagnosis of generalized anxiety disorder: development, current status, and future directions, in *Chronic Anxiety: Generalized Anxiety Disorder and Mixed Anxiety-Depression*. Edited by Rapee RM, Barlow DH. New York, Guilford Press, 1991
38. Borkovec TD, Shadick RN, Hopkins M: The nature of normal and pathological worry. *Ibid*
39. Craske MG, Rapee RM, Jackel L, Barlow DH: Qualitative dimensions of worry in DSM-III-R generalized anxiety disorder subjects and non-anxious controls. *Behav Res Ther* 1989; 27:397-402
40. Fyer AJ, Mannuzza S, Martin LY, Gallops MS, Endicott J, Schleyer B, Gorman JM, Liebowitz MR, Klein DF: Reliability of anxiety assessment, II: symptom agreement. *Arch Gen Psychiatry* 1989; 46:1102-1110
41. Marten PA, Brown TA, Barlow DH, Borkovec TD, Shear MK, Lydiard RB: Evaluation of the ratings comprising the associated symptom criterion of DSM-III-R generalized anxiety disorder. *J Nerv Ment Dis* 1993; 181:676-682
42. Brown TA, Antony MM, Barlow DH: Psychometric properties of the Penn State Worry Questionnaire in a clinical anxiety disorders sample. *Behav Res Ther* 1992; 30:33-37
43. Meyer TJ, Miller ML, Metzger RL, Borkovec TD: Development and validation of the Penn State Worry Questionnaire. *Behav Res Ther* 1990; 28:487-495
44. Hoehn-Saric R, McLeod DR: The peripheral sympathetic nervous system: its role in normal and pathological anxiety. *Psychiatr Clin North Am* 1988; 11:375-386
45. Hoehn-Saric R, McLeod DR, Zimmerli WD: Somatic manifestations in women with generalized anxiety disorder: psychophysiological responses to psychological stress. *Arch Gen Psychiatry* 1989; 46:1113-1119
46. Borkovec TD, Lyonfields JD, Wisner SL, Diehl L: An examination of image and thought processes in generalized anxiety. *Behav Res Ther* 1993; 31:321-324
47. Hudson JI, Pope HG Jr: Affective spectrum disorder: does antidepressant response identify a family of disorders with a common pathophysiology? *Am J Psychiatry* 1990; 147:552-564
48. Andrews G, Stewart G, Morris-Yates A, Holt P, Henderson S: Evidence for a general neurotic syndrome. *Br J Psychiatry* 1990; 157:6-12
49. Kendler KS, Neale MC, Kessler RC, Heath AC, Eaves LJ: Major depression and generalized anxiety disorder: same genes, (partly) different environments? *Arch Gen Psychiatry* 1992; 49:716-722
50. Crowe RR, Noyes R, Pauls DL, Slymen DJ: A family study of panic disorder. *Arch Gen Psychiatry* 1983; 40:1065-1069
51. Fyer AJ, Mannuzza S, Gallops MS, Martin LY, Aaronson C, Gorman JM, Liebowitz MR, Klein DF: Familial transmission of simple phobias and fears: a preliminary report. *Arch Gen Psychiatry* 1990; 47:252-256
52. Fyer AJ, Mannuzza S, Chapman TF, Liebowitz MR, Klein DF: A direct interview family study of social phobia. *Arch Gen Psychiatry* 1993; 50:286-293
53. Goodman WK, Price LH, Delgado PL, Palumbo J, Krystal JH, Nagy LM, Rasmussen SA, Heninger GR, Charney DS: Specificity of serotonin reuptake inhibitors in the treatment of obsessive-compulsive disorder: comparison of fluvoxamine and desipramine. *Arch Gen Psychiatry* 1990; 47:577-585
54. Liebowitz MR, Quitkin FM, Stewart JW, McGrath PJ, Harrison WM, Markowitz JS, Rabkin JG, Tricamo E, Götz DM, Klein DF: Antidepressant specificity in atypical depression. *Arch Gen Psychiatry* 1988; 45:129-137
55. Clark DA, Beck AT, Beck JS: Symptom differences in major depression, dysthymia, panic disorder, and generalized anxiety disorder. *Am J Psychiatry* 1994; 151:205-209

## APPENDIX 1. DSM-IV Diagnostic Criteria for Generalized Anxiety Disorder

- A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).
- B. The person finds it difficult to control the worry.
- C. The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms present for more days than not for the past 6 months) . . . .
  - (1) restlessness or feeling keyed up or on edge
  - (2) being easily fatigued
  - (3) difficulty concentrating or mind going blank
  - (4) irritability
  - (5) muscle tension
  - (6) sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep)
- D. The focus of the anxiety and worry is not confined to features of an Axis I disorder, e.g., the anxiety or worry

is not about having a Panic Attack (as in Panic Disorder), being embarrassed in public (as in Social Phobia), being contaminated (as in Obsessive-Compulsive Disorder), being away from home or close relatives (as in Separation Anxiety Disorder), gaining weight (as in Anorexia Nervosa), having multiple physical complaints (as in Somatic Disorder), or having a serious illness (as in Hypochondriasis), and the anxiety and worry do not occur exclusively during Posttraumatic Stress Disorder.

- E. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- F. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hyperthyroidism) and does not occur exclusively during a Mood Disorder, a Psychotic Disorder, or a Pervasive Developmental Disorder.

## Outpatient Psychotherapy I: Volume, Costs, and Use

Mark Olfson, M.D., and Harold

**Objective:** This article provides an overview of the patient psychotherapy in the United States. **Method:** Section of the 1987 National Medical Expenditure Survey and distribution of psychotherapy visits by provider status, and mental health utilization profile of patients. **Results:** These visits were to mental health specialists (more than 60% of treatment of mental health conditions (63.5%). However, a substantial proportion of the visits to mental health conditions (29.8%). Separated and divorced to 49 years, and those with more than 15 years of education. **Conclusions:** Psychotherapy use was also greater than those reporting health-related functional impairment. Users exceeded those of nonusers. **Conclusions:** Psychotherapy is commonly assumed: they report poorer general and more functional impairment than nonusers. All provide psychotherapy to treat mental disorders, all (Am J Psychiatry 1994; 151:1281-1288)

Growing pressure to contain health care expenditures has focused attention on improving our understanding of the utilization and costs of medical services. These issues are especially important for mental health services where policy analysts, third-party payers, service providers, and symptomatic individuals often have very different notions of who should receive care, who should pay for care, and under what circumstances.

Received July 28, 1993; revision received Jan. 14, 1994; accepted Feb. 14, 1994. From the Department of Psychiatry, College of Physicians and Surgeons of Columbia University, and the Office of Research, American Psychiatric Association, Washington, D.C. Address reprint requests to Dr. Olfson, Department of Psychiatry, College of Physicians and Surgeons of Columbia University, 722 West 168th St., New York, NY 10032.