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The Diagnosis and Assessment of Post-Traumatic Stress Disorder in Adults

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Since 1980, when post-traumatic stress disorder (PTSD) was officially recognized as a unique diagnostic entity in the *Diagnostic and Statistical Manual III* (DSM III; APA, 1980), great strides have been made in the assessment of this complex and debilitating disorder. In the early 1980s, when few standardized instruments were available, clinicians and researchers relied on PTSD symptom checklists with unknown reliability and validity. Now, however, in the early 1990s those interested in assessing PTSD can select from a wide range of sophisticated measures, including structured clinical interviews, questionnaires, and psychophysiological procedures (see Green, 1991; Litz et al., in press; Resnick, Kilpatrick & Lipovsky, 1991; Sutker, Uddo-Crane & Allain, 1991).

Unfortunately, because progress in this area has been so rapid and so many new instruments have appeared, many clinicians who treat trauma victims may not yet be aware of the array of assessment options currently available. The goal of the present chapter is to describe the latest developments in the assessment and diagnosis of PTSD with the hope that it will foster the widespread adoption of state-of-the-art methods and instruments by clinicians working with traumatized adults.

This chapter describes three methods of collecting diagnostic information: the clinical interview, questionnaires or inventories, and psychophysiological techniques. Whenever possible, empirical findings relevant to the various instruments in each of these categories are presented so that clinicians can make informed choices about which measures best suit their needs. However, because the assessment of PTSD involves much more than simply administering a battery of tests, much of the chapter is devoted to depicting the clinical context in which

the process of evaluating trauma victims occurs. The chapter offers practical guidelines for taking comprehensive trauma histories across the life span, for sequencing clinical interviews and deciding what specific content areas should be addressed, and for evaluating comorbid problems such as depression, substance abuse, and personality disorders.

The focus of this chapter is on assessing adult trauma victims. The guidelines offered are most appropriate for working with an adult client with a readily identifiable adult-onset trauma such as combat or rape, which becomes the target of the assessment. The assessment process described in this chapter is divided into separate sections that evaluate the target trauma, pre-trauma and post-trauma functioning, and current functioning. However, many of the suggestions made regarding the assessment of trauma easily can be adapted for the adult client traumatized as a child, such as an incest survivor.

INTERVIEWING TRAUMA SURVIVORS

Although questionnaires and psychophysiological procedures are an invaluable source of diagnostic information, the foundation of the PTSD assessment is the clinical interview. At times the interview will be relatively unstructured, with broad, open-ended questions that allow the trauma victim to tell his or her story, and at other times it will be highly structured, with standardized questions that inquire about specific diagnostic criteria. Due to the breadth of information needed to develop a comprehensive clinical picture, the clinician should plan to spend several sessions on the interview in order to obtain sufficiently detailed and clinically meaningful information.

The clinician should keep several goals in mind throughout the interview. The first goal, which is fundamental to all clinical assessment but is particularly important when working with trauma victims, is to establish rapport and to create a safe and responsive interpersonal context for exploring highly sensitive material. A second goal is to evaluate the client's current functioning by inquiring about the problems the client is experiencing and by evaluating the psychological resources he or she has available for coping with those problems. Conducting a functional analysis by identifying antecedents and consequences of current problems can be invaluable in helping the clinician form hypotheses about the client's unique adjustment to trauma. The use of structured diagnostic interviews to assess current and lifetime diagnoses of comorbid psychiatric disorders also is recommended.

A third goal is to obtain a trauma-focused social history with an emphasis both on understanding the nature of the target trauma and its impact as well as on determining the extent of traumatization or victimization across the life span. In their work with combat veterans the authors often have found that the combat trauma is only one component of a learning history marked by multiple traumas and that a history of other trauma, such as early physical or sexual abuse, may have rendered a veteran particularly susceptible to the effects of combat.

Table 2.1
Overview of the PTSD Assessment

I. Presenting complaints and immediate needs
   A. Is client safe (is crisis intervention needed)?
   B. Is trauma the focus of presenting complaint?
II. Pre-trauma history (see Table 2.2)
III. Description of traumatic event (see Table 2.2)
IV. Post-trauma history (see Table 2.2)
V. PTSD diagnosis
   A. Frequency of symptoms
   B. Severity of symptoms
   C. Functional interference
VI. Assessing comorbidity
   A. Additional Axis I and Axis II diagnoses
   B. Characteristic interpersonal styles/problem areas
VII. Treatment planning
   A. Is environment safe and stable?
   B. Can client tolerate memory work?
   C. Should concurrent problem be addressed first?
   D. Is pharmacotherapy needed?

A fourth goal is to integrate the information on current functioning and historical antecedents in order to arrive at a conceptual model of the etiology and maintenance of the client's problems. Finally, the clinician offers the client clear feedback on the results of the assessment. The clinician can use the feedback session to help the client identify specific targets and issues for intervention, to discuss treatment options, and to instill accurate expectations for treatment.

The various content areas to be addressed in clinical evaluations of trauma survivors are outlined in Table 2.1, which is intended as a guide for sequencing a typical evaluation of a trauma survivor. Most of the information in Table 2.1 is collected via the clinical interview and can be corroborated by information from psychometrics, psychophysiological assessment, report of significant others, or chart review. The following sections describe clinical assessment issues regarding presenting complaints, taking the trauma-focused social history, and evaluating the target trauma.

Presenting Complaints

Trauma survivors vary greatly with respect to whether or not they attribute their presenting complaints to a specific traumatic experience. At one extreme

are clients who present with unequivocal information about an experience that was overwhelming for them and that they cannot "get over," "forget about," or "get out of their head." They describe PTSD symptoms readily, with little prompting, and clearly state the reasons for seeking treatment (e.g., "I want to sleep better" or "I want to concentrate better on my work").

At the other extreme are clients who present with apparently non-trauma-related problems such as depression, relationship difficulties, sexual dysfunctions, or family discord. Careful inquiry, however, may reveal symptoms of PTSD such as recurrent nightmares or emotional numbing. In these cases, the clinician's job is to gather standard information (see Table 2.1) and to begin to form hypotheses about the possibility of a traumatic history (particularly early childhood trauma). The majority of clients, however, fall midway between these two extremes. Most clients typically report a trauma but need extensive inquiry to provide sufficient information for diagnostic decision making and treatment planning.

Taking the Pre-Trauma History

Gaining a clear understanding of a client's level of functioning prior to the target trauma is essential for developing a cogent case formulation. Taking a detailed pretrauma history serves two important functions. First, different people exposed to the same traumatic life event have widely varied reactions. Taking into account a client's learning history and personal resources prior to the trauma helps the clinician appreciate fully the unique impact of the trauma for that client. Second, the pre-trauma history serves as a baseline for making a diagnosis of PTSD. The PTSD diagnosis requires that current problems represent a decline from the level of functioning prior to the occurrence of the trauma. Table 2.2 contains the various content areas that should be explored when taking the pre-trauma history.

In every case the clinician should explore the possibility of early physical and sexual abuse. When a history of childhood trauma is reported, the clinician should form hypotheses about how periods of abuse or neglect have shaped the client's fundamental interpersonal schemas and maladaptive ways of relating to others (Horowitz, 1976; McCann & Pearlman, 1990b). The goal is to evaluate underlying beliefs the client has acquired regarding issues such as trust, self-care, and expressing needs. In therapy these underlying schemas themselves become targets of treatment (McCann & Pearlman, 1990b). For clients who deny a history of early trauma, the clinician, often in the context of an ongoing treatment relationship, should continue to be vigilant for clues suggesting such a history. Memories of early traumas often are strongly defended against and may be inaccessible to the client for extended periods of time.

Table 2.2
Specific Areas to Explore in Clinical Interviews with Trauma Survivors

I. Pre-trauma history
- A. Family history of psychopathology?
- B. Early experiences with caregivers?
- C. History of abuse (physical, sexual, emotional) or neglect?
- D. Academic and social experiences in school?
- E. Relationship history?
- F. Lessons learned/beliefs about self, men, women, trust, needs, safety?
- G. Stressful events (e.g., losses, accidents) and their impact?
- H. Substance use history?
- I. Occupational history?
- J. Physical/somatic history?

II. Traumatic experiences
- A. What was going on in your life at the time that this event occurred?
- B. What occurred directly prior to the event? How were you feeling?
- C. What happened (what were you seeing, hearing; what did you try to do)?
- D. What happened afterwards? What were the responses of those around you?
- E. Are there things that you have forgotten?
- F. What is it like to tell me?
- G. What has the event meant to you over time?

III. Post-trauma history
- A. Specific PTSD symptoms?
- B. Specific situations that are problematic?
- C. Changes in key relationships, work, leisure time, self-care?
- D. Response to further life stress?
- E. Substance use?
- F. Treatment history?
- G. Current environment and sources of support?
- H. Strengths?

Assessing the Target Trauma

The exploration of traumatic memories is a task that must be handled delicately, respecting the client's approach-avoidance conflict between wanting to reveal and wanting to conceal traumatic material (see Ruch et al., 1991). The clinician can encourage disclosure by being warm and nonjudgmental, by asking matter-

of-fact questions about sensitive topics, and by remaining imperturbable as intense emotions and disturbing memories become activated and vivid for the client. However, in order to avoid activating feelings of being revictimized, clients always should be given control over what they disclose and when.

The clinician should be aware that the assessment process is much more than a means for gathering information. From the initial session on, the assessment can be therapeutic in that it involves encouraging active processing of traumatic memories. Clients often report obtaining significant relief from the several sessions required to complete an evaluation. At the very least, disclosure of traumatic memories and emotions during assessment can provide evidence contrary to a client's maladaptive assumptions about what might occur if he or she were to reveal what happened, such as the fear of "going crazy" and needing to be hospitalized or the fear of being humiliated or rejected.

One scheme that is helpful as a guide for exploring trauma memories is Foa, Steketee, and Olasov-Rothbaum's (1989) expansion of Lang's (e.g., Lang, 1985) conceptualization of how fear information is stored in memory. Foa et al. (1989) proposed that traumatic events are stored in memory in a rich multidimensional network. The trauma network (or schema; see McCann & Pearlman, 1990b) consists of information about stimuli present during the trauma (e.g., what the client saw, heard, smelled, or felt); information about cognitive, motoric, and physiological responses elicited during the trauma (e.g., what the client thought or did, how the client reacted physiologically, including "fight or flight" responses); and information that defines the meaning of the event for the person (e.g., "I am helpless, and I have no control over what happens to me"; "I can never be safe—terrifying things can happen any place, any time, and they are completely unpredictable").

Assessing traumatic experiences and understanding their impact on the trauma victim involve determining what is stored in the trauma network. While keeping the stimulus, response, and meaning dimensions in mind, the clinician should listen carefully to the client's account of the trauma, then inquire explicitly about memory elements that are absent or de-emphasized. Questions as simple as "What did you notice around you?" (stimulus elements), "What did you do while this was happening?" (response elements), and "What did you tell yourself about why this happened?" (meaning elements) can elicit abundant information regarding the client's experience of the trauma (see Table 2.2).

Clients exhibit marked individual differences in reported memory elements. Many clients focus on stimulus elements, leaving response and meaning elements out of their account of the trauma. Use of the trauma network scheme enables the clinician to ascertain which elements a client characteristically reports. This information then can be used as a guide in treatment. For example, a client who focuses exclusively on stimulus elements may be using intellectualization as a defense against accessing other aspects of the trauma such as painful emotions or intolerable cognitions. In therapy the clinician would encourage the client to explore the memory elements that are being avoided.

Obtaining sufficient information about the target trauma when a client is reluctant to discuss it or has effectively blocked traumatic memories from awareness can be an exceptionally difficult clinical task. The issue confronting the clinician is how far he or she should go when inquiring about traumatic material. Some clients are fragile and react so adversely to uncovering traumatic memories that probing for details would be inappropriate during assessment. Other clients are so emotionally numb or withdrawn that they cannot convey the severity of what happened to them, even with considerable prompting. The authors have found it helpful in their work with combat veterans to provide a clear explanation regarding the information that will be needed in order to conduct a thorough evaluation. It is made clear to clients at the outset that explicit information will be elicited from them about their traumatic experiences and the ways in which these experiences may have affected them. Also, it is emphasized that they have permission to go only as far as they feel comfortable as they begin to reveal what happened to them.

A rule of thumb is to ask for as much information as a client is willing to give, while reflecting how difficult it is to discuss what took place, then to draw on additional sources of information when available (e.g., referring clinician, chart review, significant others) to fill in any missing details. In some cases it may prove helpful to postpone assessment of the target trauma by focusing on a developmental history in order to establish rapport and ease into discussion of the target trauma.

Evaluating the Stressor Criterion

According to the DSM III-R (APA, 1987), in order to render a diagnosis of PTSD, the clinician must first establish that criterion A is met, which entails a judgment that the target trauma was an event "outside the range of normal human experience and that would be markedly distressing to almost anyone." The clinician has two major tasks in this context: obtaining a sufficient amount of information from the client and making a clinical judgment about the "stressfulness" of the event reported. In many cases the target trauma unequivocally meets criterion A (e.g., violent assault, clear life threat, severe injury) even if the client gives only sketchy information. In other cases this judgment is more difficult to render (e.g., miscarriage, death of close friend), even when clients are able to provide thorough descriptions of what happened to them. Yet, many apparently nontraumatic events can lead to significant PTSD symptomatology (see Helzer, Robins & McEvoy, 1987) and should prompt an assessment for PTSD when revealed in the context of a clinical evaluation.

It is clear from research with a variety of populations that the risk for developing PTSD is high after individuals experience so-called objective traumas such as life-threatening events (Kulka et al., 1991; Kilpatrick et al., 1989). However, there is growing consensus that subjective appraisal of threat or of the intensity of an event also is an important risk factor in the development of PTSD, inde-

pendent of the degree of "objective" stress (see Davidson & Foa, 1991; Green, 1990). In recent studies, the term *low magnitude* stressor has been used to describe events that may not be considered objectively traumatic but that have been perceived as extremely stressful. Data from the DSM-IV field trials have suggested that a strict interpretation of criterion A may be inappropriate in that an alarmingly high percentage of subjects with low magnitude stressor events had significant PTSD symptomatology (Kilpatrick & Resnick, 1991). This has led several authors to suggest dropping criterion A as a requirement for the diagnosis of PTSD and move instead to a diagnosis based only on symptom reports or, at least, broaden criterion A to include subjective judgments about perceived uncontrollability and severity of experience (see Davidson & Foa, 1991).

There are several psychometrically sound questionnaires available to systematically assess the extent of exposure to "objective" traumatic stress. These scales have been designed primarily for research purposes in the area of combat-related PTSD (e.g., Friedman et al., 1986; Keane, Fairbank, Caddell, Zimmering, Taylor & Mora, 1989; Kulka et al., 1988). However, several other trauma exposure scales have been developed in the area of crime-related PTSD, including the Sexual Experiences Survey (Koss & Gidycz, 1985) and the Incident Report Interview (Kilpatrick et al., 1987). In addition, other scales have been developed to measure the effects of natural and man-made disasters (see Green, 1990).

Taking the Post-Trauma History

Next, the focus of the assessment shifts to the impact of the target trauma on the client. The specific content areas to be evaluated include the severity, frequency, and course of PTSD symptoms; changes in relationships and work and leisure activities; changes in coping strategies for handling subsequent life stressors (e.g., marital difficulties, financial strains, child rearing); substance abuse (self-medication); adequacy of social support and changes in social support network; treatment history; and personal strengths (see Table 2.2).

In making the diagnosis of PTSD it is crucial to evaluate not only the presence or absence of PTSD but also the frequency, severity, and functional impact of any PTSD symptomatology. Careful evaluation of the functional impact of trauma-related symptoms is particularly important because treatment decisions should be based on the extent to which a particular symptom (or cluster of symptoms) interferes with some important aspect of a client's normal functioning.

Evaluating Comorbid Problems

Epidemiological and clinical research suggests that in the majority of cases PTSD co-occurs with other Axis I disorders, with treatment-seeking populations evincing much higher rates of additional disorders than community samples (Bromet, Schulberg & Dunn, 1982; Frank & Anderson, 1987; Kilpatrick et al., 1985; Sierles et al., 1983; Sierles et al., 1986). Therefore it is essential to assess routinely for other psychiatric disorders when evaluating a trauma survivor for PTSD (see Litz et al., in press; Penk et al., 1989; Resnick, Kilpatrick & Lipovsky, 1991).

High rates of comorbid depression, substance use disorders, and anxiety disorders such as panic and generalized anxiety are common (e.g., Helzer, Robins & McEvoy, 1987; Keane et al., 1988; Keane & Wolfe, 1990; Kulka et al., 1988). Other concurrent problems include coping deficits and inadequate social supports (e.g., Keane, Scott et al., 1985; Solomon & Mikulincer, 1987; Solomon, Mikulincer & Avitzur, 1988; Wirtz & Harrell, 1987), relationship or family problems (e.g., Figley & Sprenkle, 1978; Steketee & Foa, 1987), and physical health problems (e.g., Litz et al., 1992).

Three instruments are particularly helpful in evaluating comorbidity. The Structured Clinical Interview for DSM-III-R (SCID; Spitzer et al., 1990) allows the clinician to diagnose concurrent psychiatric disorders. Two standardized inventories, the Symptom Check List–90 (SCL–90, Derogatis, 1977) and the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1983), are continuous measures of psychopathology that provide dimensional information on a variety of problem areas.

The SCL–90 is a ninety-item self-report inventory that measures current levels of psychopathology on nine symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The SCL–90 is brief and easy to administer and has been shown in preliminary studies to aid in the assessment of PTSD (Blake et al., 1990; Saunders, Mandoki & Kilpatrick, 1990).

The MMPI has proven to be useful for obtaining diagnostic and personality functioning information from traumatized patients (see Penk et al., 1988). Like the SCL–90 the MMPI is particularly helpful in that, in addition to having a variety of clinical scales, it has a scale that assesses PTSD (Keane, Malloy & Fairbank, 1984). The restandardized and modernized version of the MMPI, the MMPI–2 (Butcher et al., 1989), also has been shown to be helpful in the evaluation of PTSD and is essentially interchangeable with the original MMPI for this purpose (Litz, et al., 1991; Lyons & Keane, 1992).

For comprehensive diagnostic decision making the authors advocate the use of the multiaxial conventions of the DSM III-R, which encourages the clinician to consider a number of different dimensions in developing a comprehensive picture of a client's adjustment to trauma. Following the multiaxial scheme, the clinician would determine the presence or absence of PTSD and other Axis I disorders; determine the presence of personality disorders and indicate them on Axis II; identify serious medical or physical complications and indicate them on Axis III; rate the severity of past and current life stressors on Axis IV; and rate the client's overall level of functioning on Axis V. The clinician should consider all sources of information available (e.g., interviews, questionnaires, chart review) in completing the multiaxial ratings.

Treatment Planning

The last step of a PTSD assessment is to develop treatment recommendations based on careful consideration of all the information gathered during the assessment just described. This section briefly discusses some of the essential questions that clinicians need to consider in identifying and prioritizing targets for intervention. For a more detailed discussion of clinical decision making regarding the treatment of PTSD see Keane, Fairbank et al. (1985); Keane et al. (1992); Litz et al. (1990); Litz et al. (in press); McCann & Pearlman (1990b); and Horowitz (1976).

Is the client's environment safe and stable? Before proposing any specific intervention the clinician needs to consider whether the client's current living situation might preclude beginning any type of intensive psychotherapy. Examples of problems that might interfere with progress in therapy include unemployment, homelessness, or living with an abusive spouse. Exploring traumatic memories in therapy can be upsetting, and, if the client is already struggling to cope with stressors in his or her daily life, it might be prudent to postpone any trauma-related work.

How much uncovering work can the client handle at present? Processing trauma memories in psychotherapy is an essential ingredient of any PTSD treatment (see Fairbank & Nicholson, 1987). However, as noted above, this kind of work can be distressing. Clients often initially become more symptomatic as they begin to access long-avoided memories, even though the long-term outcome is superior to palliative approaches (see Foa et al., 1991). The uncovering of traumatic memories also requires a good deal of expertise and resources on the part of the therapist (see Litz et al., 1990). The clinician should monitor a client's progress closely and should be flexible in alternating between uncovering work and stress management or supportive psychotherapy, depending on the client's ability to tolerate his or her current level of distress.

Should concurrent problems be addressed prior to the trauma work? If a client is able to begin therapy, the clinician then needs to consider which problem to address first: the trauma itself or some concurrent problem that, if left unaddressed, could disrupt the trauma work. In working with combat veterans, the most common issue that surfaces when prioritizing targets for change is the extent to which substance abuse or dependence needs to be addressed prior to addressing PTSD issues. The authors typically recommend that clients with active substance abuse achieve a significant period of sobriety and learn relapse prevention skills before they address their trauma in treatment. For example, in a recent study Boudewyns et al. (1991) found that substance abuse or relapse was the most common reason for Vietnam combat veterans' prematurely terminating treatment.

Is pharmacotherapy indicated? For clients with comorbid affective or anxiety disorders, a psychopharmacological evaluation should always be considered, given the extensive literature supporting the efficacy of medication for these problems. Also, research has shown increasingly that pharmacological interventions help alleviate the positive symptoms of PTSD (reexperiencing and hyperreactivity), which may allow a client to tolerate therapeutic exposure to traumatic memories. A thorough discussion of pharmacotherapy issues in the treatment of PTSD can be found in Friedman (1991).

Standardized Assessment Instruments for PTSD

The assessment of trauma victims can be enhanced greatly through the use of standardized instruments and methods such as structured interviews, questionnaires, and physiological measures. The use of multiple instruments provides converging evidence that increases confidence in diagnostic decision making and treatment planning (Keane, Wolfe & Taylor, 1987). By using standardized instruments clinicians can (1) specify the current severity of a disorder for a given individual; (2) track changes in severity over time and predict course, prognosis, and response to treatment; and (3) communicate assessment results efficiently and succinctly. The following sections provide a brief introduction to psychometric theory for readers who may be unfamiliar with the principles of psychological testing, followed by an overview of instruments for assessing PTSD. Readers interested in learning more about test theory should consult Cronbach (1990) or Crocker and Algina (1986).

Introduction to Psychometric Theory

Psychological tests are evaluated with respect to two important characteristics: reliability, which refers to the consistency or replicability of test scores, and validity, which refers to the meaningfulness or accuracy of inferences, interpretations, or decisions made on the basis of those scores. Test developers often report the consistency of scores over time (test-retest reliability), over different interviewers or raters (interrater reliability), or over different items on the same test (internal consistency). Reliability for continuous measures such as questionnaires is typically reported as a correlation coefficient, which can vary between .00 and 1.00, with coefficients close to 1.00 indicating excellent reliability. Reliability for dichotomous measures such as interviews that yield present/absent diagnostic decisions often is reported as a kappa coefficient (Cohen, 1960), which also varies between .00 and 1.00 and is interpreted as the amount of agreement beyond chance.

Caution should be observed when interpreting some measures of reliability for tests measuring psychopathology. For example, a test-retest reliability coefficient based on two administrations of a PTSD questionnaire given one month apart might reflect genuine change in clinical status for some examinees in addition to measurement error. Similarly, if the PTSD questionnaire contained items that tap different aspects of the disorder, such as questions on reexperi-

encing, numbing/avoidance, and hyperarousal, an internal consistency coefficient might reflect differences in item content in addition to response inconsistencies.

In addition to being reliable, a good test is valid or useful for the purposes for which it is intended. Although not all measures of validity are appropriate for all tests, a test for PTSD can be said to be valid if it has items that assess the key aspects of the disorder (content validity), if it predicts something of interest such as clinical diagnosis or response to treatment (criterion-related validity), or if it correlates with other measures of PTSD but not with measures of other disorders (construct validity).

Psychological tests are often evaluated on the basis of their diagnostic utility, a type of criterion-related validity pertaining to a test's ability to predict diagnostic status (see Kraemer, 1987). Three steps are involved in determining the diagnostic utility of a test. First, a diagnostic criterion or "gold standard" must be selected. The gold standard is typically a diagnosis determined on the basis of a clinical interview but may also be a composite criterion based on several sources of evidence (see Kulka et al., 1991 for a detailed treatment of these issues in the context of the assessment of combat-related PTSD). Second, both the gold standard and the test are administered to a group of examinees. Finally, various cutoff scores on the test are investigated for their utility, or their ability to correctly predict the outcome of the gold standard. Cutoff scores divide the group of examinees in two, such that those above the cutoff are predicted to have the diagnosis and those below the cutoff are predicted not to have the diagnosis. The optimal cutoff score for differential diagnosis is the test score that leads to the greatest number of correct predictions.

Some PTSD measures have excellent diagnostic utility, but none can predict the gold standard perfectly (see Gerardi, Keane & Penk, 1989). There are two kinds of errors in prediction, false positives, which occur when an examinee scores above the cutoff on the test but does not have the diagnosis according to the gold standard, and false negatives, which occur when an examinee scores below the cutoff on the test but does have the diagnosis. Diagnostic utility often is described in terms of sensitivity and specificity, which are two measures of test performance that take into account errors in prediction. Sensitivity is the "true positive rate," or the probability that those with the diagnosis will score above the cutoff on the test. Specificity is the "true negative rate," or the probability that those without the diagnosis will score below the cutoff on the test (Kraemer, 1987). Sensitivity will be low if the test yields many false negatives, and specificity will be low if the test yields many false positives.

Structured Interviews

In clinical research on PTSD it has become standard practice to use structured interviews for diagnostic decision making because they allow investigators to specify precisely how diagnoses were made and whether the diagnoses are reliable and valid. Structured interviews also can be valuable in clinical work in that

they allow the practitioner to inquire systematically about specific PTSD symptoms and comorbid syndromes. The sections that follow describe several structured interviews that might be valuable in the assessment of trauma victims.

The SCID

The SCID is the most widely used structured diagnostic interview to assess Axis I and Axis II disorders in the DSM III-R. The SCID consists of separate modules for each diagnostic category. Administering the entire SCID can be time-consuming and may be not be feasible in all clinical contexts. If the SCID needs to be shortened because of practical constraints, the authors recommend including the following modules as a minimum when assessing traumatized adults: all affective disorders, anxiety disorders, and substance use disorders, as well as the module for screening for psychotic disorders. In some clinical contexts the assessment of personality disorders also may be indicated.

The PTSD module of the SCID consists of probe questions for each of the seventeen PTSD symptoms in DSM III-R, plus questions on survivor guilt and guilt over acts of omission or commission. The wording of the probe questions is sensitive and clear. Clinicians are encouraged to ask additional questions, as needed, to determine the appropriate rating for each item. Symptoms are judged to be absent, of subclinical severity, or present and count toward a diagnosis only if they are judged to be present.

The PTSD module appears to be clinically sensitive and reliable and has been widely used in PTSD research. However, a significant limitation of the SCID is that it yields only dichotomous present/absent information about PTSD. It is not sensitive to differences in current severity of PTSD, and it is impractical as an outcome measure because, over time, it can detect only changes in diagnostic status rather than changes in symptom severity.

The Diagnostic Interview Schedule (DIS)

The DIS is a highly structured interview designed for use by nonclinicians. The DIS has much less to recommend it as a criterion measure for PTSD. The DIS does appear to have at least moderate test-retest reliability. However, the validity of the DIS has been called into question. Kulka et al. (1988) found that, although the DIS performed well when the prevalence of PTSD was relatively high, it performed poorly in a community-based sample with lower prevalence. In the community-based sample, with a composite diagnosis as the criterion, the DIS had nearly perfect specificity (.99), but very low sensitivity (.23) and kappa (.28). This suggests that, in a population with a relatively low base rate of PTSD, the DIS correctly identifies individuals without PTSD but does not do a good job of identifying individuals with PTSD.

Kulka et al. (1988) describe several possible problems with the DIS that might explain why it performed so poorly. One problem is that the wording of the probe questions may make it difficult to understand what is being asked. A second problem is that the DIS requires that the client make a causal connection

between a symptom and a specific traumatic event, which, as was mentioned earlier, may be very difficult for some clients to do. Finally, because the DIS is highly structured and intended for use by nonclinicians, open-ended follow-up questions are not permitted.

PTSD Interview (PTSD-I)

Unlike the SCID and the DIS, the PTSD-I (Watson et al., 1991) yields both dichotomous and continuous scores. Watson et al. (1991) report strong test-retest reliability (.95) and internal consistency (alpha = .92), as well as excellent sensitivity (.89), specificity (.94), and kappa (.82), using the DIS as the criterion.

The PTSD-I appears to have desirable psychometric properties but is limited by its format and procedure for administration. A copy of the rating scale is given to the interviewee, probe questions for the symptoms are read aloud, and the interviewee indicates his or her rating. This format differs little from a self-report instrument, and it is not clear that the PTSD-I should even be considered a structured interview. The PTSD-I may be appropriate as a screening instrument but, if given as intended, will elicit minimal qualitative information about PTSD symptomatology.

Structured Interview for PTSD (SI-PTSD)

Like the PTSD-I, the SI-PTSD (Davidson, Smith & Kudler, 1989) appears to be a psychometrically sound interview that yields both dichotomous and continuous scores for PTSD. The SI-PTSD appears to be a useful structured clinical interview for diagnosing PTSD and measuring symptom severity. In addition to initial probe questions it provides helpful follow-up questions that encourage clients to elaborate on their descriptions of symptoms. Items on the SI-PTSD are rated by the clinician on a five-point scale, and explicit descriptions of severity are provided for each point on the scale to aid the clinician in making the appropriate rating.

Clinician-Administered PTSD Scale (CAPS)

The CAPS (Blake, Weathers et al., 1990) is a new structured interview for PTSD developed at the National Center for PTSD. The CAPS was designed for use by clinicians familiar with the effects of trauma because the authors of the CAPS felt that the task of gathering adequate qualitative and quantitative information about PTSD symptoms was best accomplished by experienced clinicians. Two versions of the CAPS are available: a current and lifetime diagnostic version (CAPS–1) and a weekly symptom-rating version (CAPS–2).

The CAPS consists of thirty items that assess DSM-III-R symptoms of PTSD, symptoms associated with PTSD (e.g., survivor guilt), and overall symptom severity, degree of improvement since an earlier measurement, impairments in social and occupational functioning, and validity of responses. Like the PTSD-I and the SI-PTSD, the CAPS yields dichotomous and continuous scores. Two unique features of the CAPS are that it has separate rating scales to determine

the frequency and intensity of each symptom and it contains behaviorally anchored probe questions and scale values. Interviewers are encouraged to ask their own follow-up questions, when appropriate, and to use their clinical judgment to arrive at the best rating.

Studies on the psychometric properties of the CAPS–1 and CAPS–2 are currently under way at the National Center for PTSD, and have been presented at several national conferences. Preliminary data indicate that the CAPS has very promising reliability and validity (Blake, Weathers et al., 1990).

DIAGNOSTIC QUESTIONNAIRES

In addition to the structured interviews discussed above, several questionnaire measures of PTSD have been developed and psychometrically evaluated. These types of PTSD measures enjoy widespread usage because they are easy to administer and score, and they are useful to screen for the presence of PTSD. These questionnaires can be used either as diagnostic measures by selecting appropriate cutoff scores or as continuous measures of the severity of PTSD symptoms. For rigorous diagnostic purposes, the authors recommend a structured clinical interview and the administration of one or more of these questionnaires.

Keane PTSD Scale of the MMPI (PK Scale)

The original PK Scale (Keane et al., 1984) consists of forty-nine MMPI items that were found to differentiate between combat veterans with and without PTSD. In the original report on this scale, Keane, Malloy, and Fairbank (1984) found that a cutoff of thirty correctly classified 82 percent of the subjects.

Subsequent studies have confirmed that the PK Scale can differentiate individuals with PTSD from those without the disorder. For example, Watson, Kucala, and Manifold (1986) found that, compared with psychiatric and normal control subjects, combat veterans with PTSD had much higher PK Scale scores. They also found adequate sensitivity (.87) and specificity (.74) for distinguishing between PTSD subjects and normal controls and somewhat lower sensitivity (.73) and specificity (.53) for distinguishing between PTSD subjects and psychiatric controls. However, the group means and the optimal cutting scores on the MMPI-PTSD were much lower than in the Keane et al. (1984) report. These differences are probably due to sampling differences and different diagnostic procedures as the criterion measure.

Cannon et al. (1987) found that the sensitivity of the PK Scale was .76 and the specificity was .64 for distinguishing between groups of inpatients with and without PTSD. However, unlike Keane, Malloy, and Fairbank (1984), they found a very high rate of false positives. This difference may have been due to a much lower base rate of PTSD in the Cannon et al. study (14 percent versus 50 percent), or it may have been due to different diagnostic procedures.

With the publication of the MMPI–2 (Butcher et al., 1989) some modifications

have been made in the PK Scale. The most important change is that three items that appeared twice in the original PK Scale have been deleted, resulting in a forty-six-item scale. Lyons and Keane (1992) discuss this and other changes and address the complex issue of selecting an appropriate cutoff score.

Although no reliability studies have appeared on the original PK Scale, the forty-six-item PK scale in the MMPI–2 has been shown to have strong internal consistency (.85–.87) and test-retest reliability (.86–89; Graham, 1990). The PK Scale appears to be valid in that it performs moderately well in differentiating combat veterans with and without PTSD. The PK Scale also may be useful for other traumatized populations (e.g., Koretzky & Peck, 1990; Williams, 1990), although few studies have been conducted to date.

Mississippi Scale for Combat-Related PTSD (Mississippi Scale)

The Mississippi Scale (Keane, Caddell & Taylor, 1988) is a 35-item scale designed to measure combat-related PTSD. The items were selected from an initial pool of 200 items that reflected DSM-III criteria. Additional items were included to assess substance abuse, depression, and suicidality. In the original report (Keane, Caddell & Taylor, 1988), the Mississippi Scale was found to have excellent internal consistency (.94) and test-retest reliability (.97 over a one-week interval). The Mississippi Scale also performed quite well at distinguishing veterans with and without PTSD. Using a cutoff score of 107, the sensitivity was .93, and the specificity was .89.

The Mississippi Scale appears to have excellent psychometric properties and has outperformed the PK Scale in studies where the two scales have been compared directly. In a community sample with a lower base rate of PTSD, the Mississippi Scale had greater sensitivity (.77 versus .72), specificity (.83 versus .82), and kappa (.53 versus .48). In this study Kulka et al. (1988) used cutoffs of 89 on the Mississippi Scale and 15 on the PK Scale. The MMPI-PTSD and the Mississippi Scale were compared directly in a second study by McFall, Smith, et al. (1990), who found that the Mississippi Scale had a higher correlation with the SCID PTSD module.

A version of the Mississippi Scale for assessing civilian trauma is now available from the authors, although no studies have appeared as of this writing regarding its psychometric properties. As with the PK Scale, clinicians who use the Mississippi Scale may need to adjust the cutoff score to account for working in different settings (e.g., community mental health center versus inpatient psychiatric unit) or with victims of different types of trauma.

Impact of Event Scale (IES)

The IES (Horowitz, Wilner & Alvarez, 1979) is a fifteen-item questionnaire that measures two aspects of a person's response to stressful life events, intrusion (e.g., "I thought about it when I didn't mean to") and avoidance (e.g., "I stayed away from reminders of it"). The IES contains a seven-item intrusion subscale and an eight-item avoidance subscale. Horowitz et al. (1979) found that the two subscales had good internal consistency (.78 for intrusion, .82 for avoidance) and test-retest reliability (.89 for intrusion, .79 for avoidance). They also found that outpatients with stress response syndromes scored significantly higher on all but two IES items compared with new medical students and that the IES was sensitive to clinical change in the outpatients.

Horowitz et al. (1979) reported a moderate correlation (.42) between the intrusion and avoidance subscales, which indicates that these subscales are measuring related, but somewhat independent, dimensions of response to stress. Two subsequent studies (Zilberg, Weiss & Horowitz, 1982; Schwarzwald et al., 1987) used factor analysis to confirm that the IES measures the two different dimensions suggested originally by the authors.

The IES is one of the most widely used questionnaire measures of PTSD and one of the few scales to be used in traumatized populations other than combat veterans. A strength of the IES is that it explicitly distinguishes the two broad symptom clusters of PTSD, although the correspondence to DSM-III-R criteria is not exact.

The PTSD Scale of the SCL–90

Saunders, Mandoki, and Kilpatrick (1990) derived a twenty-eight-item PTSD scale from the SCL–90 (described previously), using items that best distinguished between women with crime-related PTSD and women without PTSD. They found that this scale had adequate sensitivity (.75) and specificity (.90), using DIS interview ratings as the criterion. However, the SCL–90 PTSD subscale had particularly poor positive predictive power (i.e., if the SCL–90 PTSD subscale was above the cutoff defined as PTSD, the probability that DIS diagnosis was indeed PTSD positive was .31). Because of this, the authors caution that further cross-validation is needed before widespread clinical application of this subscale.

PSYCHOPHYSIOLOGICAL METHODS

Psychophysiological assessment methods have been used primarily by researchers studying conditioned emotional responses in combat-related PTSD (e.g., Blanchard et al., 1982) and are seldom used in the clinical assessment of PTSD. This is unfortunate because physiological reactivity is a salient diagnostic feature of PTSD, and assessment of this phenomenon presents the rare opportunity to obtain diagnostic information about PTSD that is independent of a client's self-report. Evidence of physiological reactivity can be very helpful in compensation cases (see Litz et al., in press) or in cases where other assessment information is inconclusive. However, in that physiological measurement is usually costly and time-consuming, it is understandable that such methods have not been adopted widely. This section briefly describes the basic methodology

and findings for those interested in applying these techniques to improve diagnostic utility.

The basic paradigm entails presenting trauma-relevant and neutral (control) stimuli while measuring multiple physiological response channels such as heart rate, blood pressure, and skin conductance. Self-reported arousal is also measured, either by Subjective Units of Distress (SUDS) or by self-report of various aspects of emotional experience such as valence and arousal (see Lang, 1985). Stimuli that have been shown to be effective in eliciting responding include slides, sounds, and narrative descriptions of the traumatic event (for a review see McFall et al., 1989).

Numerous laboratory studies assessing psychophysiological reactivity have been conducted with veterans with combat-related PTSD (Blanchard et al., 1982; Blanchard et al., 1986; Blanchard, Kolb & Prins, 1991; Malloy, Fairbank & Keane, 1983; Pallmeyer, Blanchard & Kolb, 1985). It is noteworthy that despite considerable variation in the stimuli presented, the paradigm employed, and the types of control groups used, veterans with PTSD consistently have been found to be more physiologically reactive to trauma-related cues compared with veterans without PTSD. When psychophysiological approaches are utilized in assessment, the accuracy of PTSD diagnoses can be improved considerably (see Gerardi, Keane & Penk, 1989).

In a recent study, Pitman et al. (1987) presented trauma-related stimuli that were individually tailored to the experiences of the subject rather than presenting a standard set of stimuli. Pitman et al. (1987) exposed fifteen Vietnam veterans with PTSD and eighteen Vietnam veterans without PTSD to a series of thirty-second audiotaped scripts. The scripts consisted of individualized descriptions of traumatic combat experiences recalled by each subject. They found that subjects were significantly more psychophysiologically responsive to these idiographic trauma scripts than to scripts that depicted other positive and negative events.

Pitman et al.'s (1987) findings suggest that clinicians do not need standardized stimuli to conduct an adequate psychophysiological assessment. Rather, they can create powerful stimuli simply by generating individualized scripts based on a client's traumatic experiences, regardless of the type of trauma. Also, clinicians interested in assessing psychophysiological responsivity in PTSD do not need to invest in a lot of expensive equipment to do so. Heart-rate reactivity appears to be the single best predictor of PTSD status (Blanchard et al., 1986), and this can be measured using simple and reasonably priced devices.

SUMMARY

This chapter has discussed the special issues that confront a clinician during the evaluation of a traumatized client. The assessment of PTSD requires careful attention both to the content of what is reported (e.g., the nature and extent of symptomatology) and to the process by which meaningful information about

adjustment to traumatic experiences is obtained. The use of structured interviews, questionnaires, and psychophysiological techniques can help the clinician reach reliable and valid conclusions regarding the presence or absence of PTSD and concurrent problems. However, information from these instruments can inform decisions about how to proceed in treatment only when they are viewed in the context of what has been learned about the total person over the course of the assessment.