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The Empirical Development and Cross-Validation of a Millon Clinical Multiaxial Inventory (MCMI) Based Scale to Assess Posttraumatic Stress Disorder in Vietnam Veterans

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THE EMPIRICAL DEVELOPMENT AND CROSS-VALIDATION OF A MILLON CLINICAL MULTIAXIAL INVENTORY (MCMI) BASED SCALE TO ASSESS POSTTRAUMATIC STRESS DISORDER IN VIETNAM VETERANS

by

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VITA

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CHAPTER I

INTRODUCTION

Within the past decade, the phenomena of delayed and chronic posttraumatic stress disorder (PTSD) and related postwar readjustment problems have been identified in increasing numbers among Vietnam veterans, a population which recently have become the focus of attention among mental health researchers and the public media. The frequency and felt intensity of the problems reported by this population of veterans has renewed concern among mental health practitioners regarding the sequelae of war. In particular, there has been heightened interest in the assessment and diagnosis of combat related PTSD in the professional literature.

Clinical opinion and recent research have reported PTSD is not easily assessed among Vietnam veterans. Although the diagnostic criteria for PTSD is clearly stated in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III, 1980), the diagnostic process may be hampered by clinical attitudes regarding the validity of PTSD as a diagnostic entity, and clinician willingness to diagnose the

disorder. In addition, PTSD symptomology may be difficult to differentiate from that of other diagnostic entities (Walker & Cavenar, 1982). Furthermore, symptoms of PTSD may interact with, and/or be masked by symptoms of a second, coexisting syndrome (Jelinek & Williams, 1984; Sierles, Chen, McFarland, & Taylor, 1983; Sierles, Chen, Messing, Besyner, & Taylor, 1986). Problems related to the subjective nature of PTSD symptoms and the growing number of veterans seeking service-connected disability for this disorder further complicate the diagnostic assessment process.

Hence, given some of the problems surrounding the assessment of PTSD in Vietnam veterans, research into the identification and validation of clinically useful tools for the assessment of PTSD in this population would be valuable. This study proposes to examine the utility of the Millon Clinical Multiaxial Inventory (MCMI) in the assessment and identification of PTSD in Vietnam veterans. The aims of this study are to construct and cross-validate a PTSD scale derived from the MCMI and to determine the extent to which this scale can distinguish and accurately classify a group of veterans with a PTSD diagnosis from a comparable group

of veterans who carry other psychiatric (non-PTSD) diagnoses.

CHAPTER II

REVIEW OF RELATED LITERATURE

Definition of Posttraumatic Stress Disorder

According to the third edition of the Diagnostic and Statistical Manual of Mental Disorders, (DSM-III, 1980), posttraumatic stress disorder (PTSD) is a maladapative emotional response characterized by a specific cluster of symptoms that develop following the experience of a psychologically traumatic event that falls outside the range of ordinary human experience. The DSM-III provides the following diagnostic criteria for PTSD:

A. Existence of a recognizable stressor that would evoke significant symptoms of distress in almost everyone.

B. Reexperiencing of the trauma as evidenced by at least one of the following:
   (1) recurrent and intrusive recollections of the event
   (2) recurrent dreams of the event
   (3) sudden acting or feeling as if the traumatic event were reoccurring, because of an association with an environmental or ideational stimulus

C. Numbing of responsiveness to or reduced involvement with the external world, beginning some time after the trauma, as shown by at least one of the following:

(1) markedly diminished interest in one or more significant activities
(2) feeling detached or estrangement from others
(3) constricted affect

D. At least two of the following symptoms that were not present before the trauma:
(1) hyperalertness or exaggerated startle response
(2) sleep disturbance
(3) guilt about surviving when others have not, or about behavior required for survival
(4) memory impairment or trouble concentrating
(5) avoidance of activities that arouse recollection of the traumatic event
(6) intensification of symptoms by exposure to events that symbolize or resemble the traumatic event (p. 236).

PTSD is not a disorder exclusive to Vietnam veterans (Thienes-Hontos, Watson, & Kucala, 1982). This maladaptive emotional response has been found in veterans of previous wars, victims of man-made disasters, and natural disasters (e.g., vehicular accidents, rape, combat, floods, earthquakes). In veterans of previous wars, it has been called "nostalgia", "shell shock", "combat exhaustion", "combat fatigue" and "war neurosis" (Goodwin, 1986).

DSM-III acknowledges a number of natural and man-made disasters that have the potential to produce posttraumatic stress reactions. A fairly new concept, given the long history of warfare in America, is the

notion of combat as a stressor capable of producing trauma in veterans. Although numerous studies (Center for Policy Research, 1980; DeFazio, Rustin, & Diamond, 1975; Figley, 1978; Frye & Stockton, 1982; Horowitz & Solomon, 1975; Nace, Meyers, & O'Brien, 1977; Strayer & Ellenhorn, 1975; Wilson, 1978) have cited combat exposure or level of combat as a variable critical to the development of PTSD in veterans of previous wars, combat alone does not explain or account for all incidences of this disorder in Vietnam veterans. Many Vietnam veterans exposed to heavy combat have adjusted well to their war experiences and do not suffer flashbacks, recurrent war related dreams, anxiety, emotional reactivity, or other PTSD symptoms. Conversely, there are Vietnam veterans who experienced little or no combat exposure while in service that currently suffer from symptoms of this disorder.

A number of studies have identified specific psychological stresses secondary to combat that have contributed to the prevalence of PTSD in Vietnam veterans. This includes the divided sentiment among the civilian sector regarding the war in the United States (Figley & Leventman, 1980), the general political character of the war, stresses related to the veteran's

homecoming, and the unavailability of psychotherapeutic treatment for Vietnam veterans (Blank, 1982).

The studies cited above adopt the view that PTSD symptoms develop in reaction to some kind of psychologically traumatic stressor. An opposing view is the belief that PTSD develops in individuals predisposed to the disorder, because of a "flawed" personality. These opposing views regarding the etiology of PTSD have been the source of much contention and has created some very basic problems in the diagnosis and assessment of PTSD in Vietnam veterans. These problems and their impact on the diagnostic process will be discussed in detail below.

Research Trends in PTSD and Vietnam Veterans

A review of the Vietnam veteran literature indicated a steady growth in the number of articles produced over the last 15 years. Laufer (1985) organized the available research into six categories: (1) Vietnam veterans' readjustment difficulties to civilian life and other postwar readjustment problems, (2) differences between Vietnam veterans and veterans of other wars, (3) the contribution and relationship of predispositional factors to Vietnam veteran problems, (4) the contribution of combat and/or in-country

experiences in the production of postwar adjustment problems, (5) treatment strategies for veterans of the Vietnam War, and (6) social and political alienation among Vietnam veterans. The following discussion will focus on the first four categories and their impact on the assessment of Vietnam veterans.

Incidence and Prevalence of Postwar Readjustment Problems and PTSD

There appears to be a high rate of postwar readjustment problems among Vietnam veterans. It has been estimated that of the approximately 2,769,000 Americans who served in Southeast Asia during the Vietnam War, between 500,000 to 700,000 veterans are currently in need of emotional help (Carter, 1978; Downs, 1970). Among Vietnam era veterans, it has been estimated as many as 1.5 million or more will be in need of psychological services some time in the future (Cavenar & Nash, 1976; Harris, 1980). In a major epidemiological study conducted by the Center for Policy Research where a sample of 1,380 veterans were interviewed, it was revealed that 16.6% of all veterans in the sample who served in Vietnam and 29.6% of those veterans exposed to combat reported postwar readjustment

problems to civilian life (Egendorf, Kadushin, Laufer, Rothbart, & Sloan, 1981).

Prior to 1975, much of the Vietnam veteran literature seemed to focus on the increasing difficulties experienced by these veterans and to alerting service providers of the need for psychological services by this population, contrary to the expectations of military psychiatrists of a low psychiatric casualty rate (Bourne, 1972; Fendrich, 1971; Lifton, 1973; Stenger, 1974; Strayer & Ellerhorn, 1975). Several factors have been attributed to the low incidence of psychiatric casualties during the war. Block (1969) and Bourne (1970) ascribed the lack of prolonged exposure to shelling and bombardment, relatively brief duration of exposure of combat, DEROS (Date Expected to Return from Overseas), which was a rotation system limiting the tour of duty for each individual to a certain specified length of time, and the limitations placed on the physical hardships to be endured by troops. Other factors contributing to low rates of psychiatric casualties were frequent periods of rest and recreation, and the application of a treatment by military psychiatrists based on the principles of

immediacy, proximity, expectancy, simplicity and centrality (Figley, 1978).

However, in 1975 it was accurately predicted that the number of cases of PTSD in Vietnam veterans would increase (Horowitz & Soloman, 1975). Although the number of cases of PTSD have risen in the last decade and the reported cases have been either the chronic and/or the delayed subtypes, Vietnam veterans appear to have fallen more frequently in the delayed category. The widespread use of drugs in Vietnam may have contributed to the incidence of delayed PTSD. The use of drugs may have masked posttraumatic stress symptoms or enabled the soldier to cope with his problems temporarily, thus delaying their emergence (Soloman, 1971).

The actual incidence of PTSD among veterans is difficult to determine. Some veterans with posttraumatic stress symptoms received discharges which precluded treatment services from the Veterans Administration. Furthermore, not all veterans with the disorder have sought help. Felt distrust towards or betrayal by government agencies have contributed to unreported and untreated numbers of veterans with posttraumatic stress reactions.

Combat and Postwar Variables

The number of reports indicating adjustment difficulties and related postwar problems among Vietnam veterans have led many mental health professionals and researchers to question whether differences exist between veterans of this war and their peers who did not serve in the military. Some researchers have concluded that few differences exist and that the problems experienced by Vietnam veterans may be explained by predispositional factors (Brill & Beebe, 1955; Ford & Spaulding, 1973; Robins, 1974; Robins & Helzer, 1975; Wolf & Ripley, 1947). Other researchers have provided evidence contrary to predispositional factors, emphasizing the experience of combat as the variable that affects postwar adjustment (Harris, 1980; Wilson, 1977).

A major study supporting the view that postwar adjustment problems of Vietnam veterans may be accounted for by degree of combat exposure and other experiences related to combat is Legacies of Vietnam (Egendorf, Kadushin, Lauder, Rothbart, & Sloan, 1981). This study identified exposure to combat as a variable that exacerbated veterans' readjustment problems following their return home (Egendorf, et al., 1981; Laufer, Frey-

Wouters, Yager, & Donnellan, 1981). It reported combat veterans were less likely to reach out to their support networks (e.g., family, peers), and for veterans who served after 1968, exposure to combat was associated with symptoms of posttraumatic stress, feelings of anger, post-service arrests, and alcohol consumption. This study utilized a population sample which included both Vietnam era and nonveteran control groups. It investigated social and psychological adjustment using a wide range of measures (Egendorf, et al., 1981; Kadushin, Boulanger, & Martin, 1981; Laufer, et al., 1981), a threat-to-life measure of combat (Laufer, et al., 1981), and controlled for the influence of predispositonal factors (Laufer, 1985).

Several sources reported noncombat war experiences can affect and disturb veterans' lives following their return from Vietnam. Foy, Sipprelle, Rueger, and Carroll (1984) reported that a significant number of repondents diagnosable as suffering from PTSD were involved in violence against civilians. Blank (1982) adds to this category of noncombat war experiences the accidental killing of comrades (i.e., "buddies" or noncombantants from the other side) and civilians. There is also the passive observation of aggressive acts

by other veterans (e.g., torture or mutiliation), as well as experiences related to the responsibilities of medical personnel, medevac pilots, and hospital corpsmen who are immersed in death.

In addition to some postwar variables mentioned earlier, other postwar experiences that may affect a veteran's life includes the absence of sanction by society upon the warrior's return home, and the absence of prolonged and profound discussion of the events of the war with other Vietnam veterans. The latter experience is a direct consequence of the DEROS rotation system. Talking and sharing contributes to the working through of many of the veterans' experiences. But for a large majority of veterans, this process has been disrupted by a number of factors: veteran's feelings of shame or disgust about the war, veterans' desire to forget the war and their participation in it, the angry feelings and feelings of disgust among civilians (related to the divided sentiment, e.g., antiwar vs. pro-war) in the civilian sector which indirectly blamed the veteran for the war (Blank, 1982).

Unavailability of Psychotherapeutic Treatment

For several reasons, mental health professionals have been unable to provide effective psychotherapeutic

treatment for stress reactions in Vietnam veterans. Until the advent of the DSM-III, there was the absence of an accurate diagnostic category that could properly account for the cluster of symptoms that currently define the syndrome called PTSD. Hocking (1970) who cited Archibald, Long, Miller and Tuddenham (1962) stated

> ...the "combat veteran syndrome," as they called it, is a specific entity; they described it as a severely disabling condition involving startle reactions, difficulty in sleeping, dizziness, blackouts, and various psychosomatic symptoms. They found that many patients with this syndrome had delayed reporting it for many years, and pointed out that the condition is not covered by any of the diagnostic groups used in everyday psychiatric practice [emphasis added] (p. 13).

The DSM-I (1952), which was developed during the Korean War, used the category of "Gross Stress Reactions" to define those "situations in which the individual...(had)...been exposed to severe physical demands or extreme emotional stress". The DMS-II (1968), developed after veterans of World War II and the Korean War had reassimilated into civilian life, replaced the category of "Gross Stress Reactions" with a new category called "Adjustment Reactions to Adult Life" which was used to describe "fear associated with military combat and manifested by trembling, running, and hiding" (DSM-II, 1968).

Furthermore, the 12 year gap between the use of DSM-II from 1968 and the advent of DSM-III in 1980 meant that many veterans with PTSD who sought treatment prior to 1980 (i.e., before DSM-III officially introduced the category called posttraumatic stress disorder) remained "undiagnosed" because of the nonavailability of the PTSD category. Thus, prior to 1980, a widespread pattern of nondiagnosis and nontreatment of combat and noncombat related stress reactions developed.

In addition, many veterans prior to 1980 were misdiagnosed and consequently received inadequate and improper treatment. This type of error was costly. Kardiner (1959) reported that with the passage of time, these "neuroses" become consolidated and the prognosis become less and less favorable. Thus, early recognition and appropriate treatment is critical. Van Putten and Emory (1973), in a case study of five Vietnam veterans, concluded that traumatic neuroses in Vietnam veterans were frequently overlooked. Misdiagnoses such as psychomotor epilepsy, LSD abuse and schizophrenia were found in their investigation.

Until the arrival of special outreach programs launched by Disabled American Veterans and the Veterans Administration in 1978 and 1979, veterans were unable to

obtain psychological services from institutions affiliated with the Veterans Administration which took account of their war experiences (Blank, 1982). A few reasons for this phenomenon include countertransference problems stemming from the therapists' own unresolved conflicts about the war, and aversion to the hearing and sharing of gruesome, tragic events and stories of war atrocities by veterans (Blank, 1979; Figley, 1978; Figley, 1980, Laufer, et al., 1981).

Problems and Difficulties Presented in the Assessment Of PTSD

There are a wide range of factors that may present and complicate the assessment process of Vietnam veterans, particularly among veterans suffering from undiagnosed PTSD. An attempt will be made to account for the role of some of these factors and their implications for current assessment practices. These factors may be organized in the following categories: (1) clinician related factors, (2) veteran related factors, (3) the nature of PTSD symptomology, and (4) compensation and disability.

Since the symptoms described by DSM-III mostly reflect private phenomenology and since by definition the symptoms are caused by events now past, veterans who

report PTSD symptoms may frequently be suspected of simulating these symptoms. With so many veterans suffering from PTSD, the media detailing their plight (Morganthau & Shabad, 1981; Santoli, 1981) and Vet Centers documenting their numerous readjustment problems (Williams, 1980), the symptoms characteristic of PTSD have been widely publicized. Widespread attention and greater awareness of the syndrome through the media has led to an increase in the number of reported cases of delayed PTSD and a variant, factitious PTSD, among the Vietnam veteran population (Lynn & Belza, 1984). Furthermore, the VA has made it known that financial compensation might be available for those veterans who have the disorder (Atkinson, Henderson, Sparr, & Deale, 1982). Thus, for the clinician, a basic concern presented in the diagnosis of PTSD is the credibility of patient's history, a variable that can influence a clinician's willingness to assign a PTSD diagnosis. Also, there is the rejection of the validity of the diagnostic concept itself. Although this was more of a problem prior to the advent of the DSM-III (i.e., related to the issues of nondiagnosis and nontreatment), presently, it may appear from time to time (Blank, 1982).

However, a principle difficulty often is the mutual inability of the clinician and veteran to communicate effectively about the actualities of the veteran's experiences during military duty (Scurfield & Blank, 1985). Probably no other war involving American personnel has produced this kind of hesitation. This silence has prevented the adequate diagnosis and treatment of PTSD. Thus, it would be valuable to supplement diagnostic information obtained through the clinical interview with other sources (e.g., military records, interviews with family members, psychological testing). An objective instrument, removed from the biases found in a clinical interview, that could measure PTSD would be valuable.

Current literature has indicated the differential diagnosis of PTSD may be an extremely difficult task since PTSD symptomology may be similar to and may not be easily differentiated from symptoms of other diagnostic entities. Veterans with PTSD have often been misdiagnosed as schizophrenic because symptoms like violent outbursts, paranoid ideation and chaotic behavior have been misinterpreted as psychotic like states (Van Putten & Emory, 1973). Also, veterans have presented with symptoms suggestive of an antisocial

personality disorder, borderline personality disorder, atypical psychosis, depression, or paranoid disorder (Walker & Cavenar, 1982). In addition, PTSD rarely presents as a discrete diagnostic entity (Jelinek & Williams, 1984; Sierles, Chen, McFarland, & Taylor, 1983; Sierles, Chen, Messing, Besyner, & Taylor, 1986; Walker & Cavenar, 1982), hence, PTSD symptoms may be masked by and/or interact with symptoms of other coexisting syndromes. Secondary syndromes include substance abuse (alcoholism, drug dependence), antisocial personality disorder, somatization disorder, endogenous depression, and organic mental syndrome (Jelinek & Williams, 1984; Sierles, Chen, McFarland, & Taylor, 1983; Sierles, Chen, Messing, Besyner, & Taylor, 1986).

Overview of Recent Attempts to Assess PTSD

Thus far, most of the research on Vietnam veterans and PTSD has documented the presence of readjustment problems in Vietnam veterans, enumerated a number of treatment techniques, reported on non-data based case reports, and presented various theoretical conceptualizations of the disorder (Fairbank, Langley, Jarvie, & Keane, 1981; Malloy, Fairbank, & Keane, 1983). Only a handful of studies have investigated the utility

of different methods or assessment strategies for Vietnam veterans with PTSD. Early attempts to facilitate the assessment process resulted in the development of content specific PTSD related scales. These self-report instruments measured some component or characteristic feature of PTSD. Data obtained from these scales provided valuable information about the likelihood of a veteran meeting the criteria for a PTSD diagnosis. In addition, these instruments elicited information that enhanced a clinician's understanding of the veteran's experience.

Horowitz, Wilner, and Alvarez (1979) developed the Impact of Event Scale (IES). This scale measured the degree of felt distress that resulted from a serious life event by tapping into intrusive and avoidant experiences, the two most commonly reported categories of experience in response to stressful life events. This scale was "generic" in nature, and was not designed to measure the subjective distress that resulted from any specific life event. Although this scale was developed for use with a general PTSD population, it has not been used with a Vietnam veteran population.

Lund, Foy, Sipprelle, and Strachan (1984), however, developed a scale that could be used with the

veteran population. They developed a scale that measured the extent of combat, a variable highly correlated with the development of PTSD (Figley, 1978). The Combat Exposure Scale was a measure that systematically assessed the Vietnam veterans' combat experiences. This scale was unique in that it attempted to overcome the problem of post-hoc reporting bias, and was the first to address the degree, or level of trauma, by ordering combat related events into a hierarchy via the technique of Guttman scaling. Lund et al. concluded that this scale is a useful measure of trauma, and that it more strongly predicted the intensity of veterans' current PTSD symptoms than premilitary life experience.

In recent years, the direction of research has been towards the investigation of different assessment methods and the extent to which different methods are able to distinguish veterans with PTSD from a relevant comparison group of veterans who carry a psychiatric diagnosis that is not PTSD. A variety of measures have been used in these investigations. These include several physiological and behavioral measures (Malloy, Fairbank, & Keane, 1983), an array of self-report measures similar to those mentioned earlier, checklists on postmilitary adjustment problems (Penk, Robinowitz,

Roberts, Patterson, Dolan, & Atkins, 1981), and standardized psychological tests (e.g., Fairbank, Keane, & Malloy, 1983; Penk et al., 1981).

Malloy, Fairbank, and Keane (1983) conducted a laboratory based study which examined the utility of a tripartite assessment approach in distingishing three matched groups of veterans to videotaped scenes and audiotaped sounds of mild combat stimuli. These groups were distinguished on behavioral, physiological, and self-report measures of anxiety. They found this assessment approach could accurately differentiate between three groups of veterans, veterans with an exclusive diagnosis of PTSD, veterans from an inpatient psychiatry unit without a PTSD diagnosis, and a group of well adjusted Vietnam combat veterans. Thus, these findings demonstrated this multimethod approach was effective for the detection of PTSD in Vietnam veterans. Furthermore, the findings provided additional validation of PTSD as a disorder discriminable from other psychological disorders (Malloy et al., 1983).

Recent research on PTSD has indicated standardized psychological instruments show much promise in their ability to assess combat related PTSD. A number of instruments have been used to assess the patterns of

psychiatric symptoms among Vietnam veterans. By far, the most heavily documented instrument is the Minnesota Multiphasic Personality Inventory (MMPI). Several studies (e.g., Burke & Mayer, 1985; Fairbank, Keane, & Malloy, 1983; Keane, Malloy, & Fairbank, 1984) have reported MMPI profiles of Vietnam veterans with PTSD are characterized by a highly elevated F scale, Scale 8 (schizophrenia) and Scale 2 (depression).

A study by Robert, Ryan, McEntyre, Lips and Rosenberg (1985) involved work with the Millon Clinical Multiaxial Inventory (MCMI) where the profiles of 25 veterans with a PTSD diagnosis were compared to the profiles of a comparable group of veterans with psychiatric disorders that typically present problems in the differential diagnosis of PTSD. They found that the PTSD group exhibited higher elevations on nine of the 20 MCMI scales, as well as significant differences in the shape and scatter of the MCMI profiles.

A study by Hyer and Boudewyns (1987) which involved the analysis of MCMI profiles of 50 Vietnam combat veterans, resulted in the identification of an 8-2 code that characterized 88% (44 of 50) Vietnam combat veteran protocols. The 8-2 code is described as a passive agressive-avoidant style. This cluster has been

described as having a tendency to "react to stress on the emotional level through demodulated, labile...and intense outwardly expressive affect" (Antoni, Tischer, Levine, Green, & Millon, 1985, p. 396).

Although these findings are a source of both descriptive and normative data useful in enhancing the clinician's understanding of PTSD, further investigations are needed on the utility of these instruments in the diagnostic assessment of PTSD.

A study by Foy, Sipprelle, Rueger, and Carroll (1984), investigated the role of premilitary adjustment, military adjustment, and degree of combat exposure in the development of combat-related, chronic PTSD. Subjects were compared on profiles from the MMPI and a psychological problem checklist. Multiple regression analyses indicated combat exposure and, to a lesser degree, military adjustment were significantly related to PTSD symptomology. Premilitary adjustment was not related to PTSD symptomology after common variance with combat exposure and military adjustment were removed from the premilitary adjustment variable. Discriminant function analyses revealed the MMPI had an 82% correct classification rate in classifying PTSD positive versus PTSD negative combat veterans. This classification rate

improved on the 50% classification rate based on chance alone. Thus, it was concluded that the MMPI had a moderate ability to correctly classify PTSD and non-PTSD veterans. But the MMPI predictors identified in this study were not cross-validated on a second sample of veterans, a sample not used in the derivation of the predictors. Cross-validation is an approach used to determine the degree to which the reported results are sample specific. The absence of a cross-validational sample makes it difficult to determine the actual ability of the MMPI to discriminate among veterans with and without PTSD.

Taking it one step further, Fairbank, McCaffrey, and Keane (1985) generated an empirically derived decision rule that could be used to identify MMPI profiles of veterans with PTSD. In a study of the utility of the MMPI in the detection of fabricated PTSD symptoms, Fairbank et al. reported a discriminant function analysis of selected MMPI scale scores and an empirically derived decision rule that successfully discriminated and correctly classified over 90% of its subjects. This included a group of Vietnam veterans with PTSD, a group of well adjusted Vietnam veterans, and a group of mental health professionals asked to

fabricate PTSD. The first of its kind, this study provided information on the use of an objective psychometric instrument, the MMPI, in the identification and discrimination of veterans with PTSD.

Taking it even further, Keane, Malloy, and Fairbank (1984) developed and cross-validated an MMPI-based PTSD scale. This 49-item scale reportedly improved on the diagnostic hit rate of 74%, based on an empirically derived decision rule, to 82%. Items for this scale were selected from the total number of MMPI items based on the differential response patterns of 60 male veterans with PTSD and a comparable group of 60 combat veterans who served as psychiatric control subjects.

A study by Fairbank, Keane, and Malloy (1983) investigated the utility of other traditional psychological inventories, in addition to the MMPI, for the assessment of combat related PTSD. This included the Beck Depression Inventory (BDI), Zung Depression Scale, State-Trait Anxiety Inventory (STAI), and the Far Survey Schedule-II (FSS). Although limited by the sample size, (N=36), the authors of the study concluded that independently, these inventories demonstrated a general utility towards identifying Vietnam veterans

with PTSD. A discriminant function analysis indicated that collectively, these inventories were able to discriminate Vietnam combat veterans with PTSD and a relevant comparison group with good success.

Thus, results from various studies have suggested the diagnosis of PTSD may be vastly improved when results from psychometric instruments are integrated with data collected from the clinical interview. The research literature suggested future work should be directed towards determining the ability of additional psychometric inventories that could be useful in the assessment of PTSD in Vietnam veterans. For practical purposes, these instruments should be valid, reliable, and easy to administer.

One inventory that would be beneficial to investigate is the Millon Clinical Multiaxial Inventory (MCMI). Based upon a telephone survey of current assessment and testing practices by 10 VA Medical Centers with inpatient PTSD programs, Dalton, Gart, Lips, and Ryan (1986) recommended that either an MMPI or an MCMI be included in a test battery for a PTSD population.

The Millon Clinical Multiaxial Inventory (MCMI) is a personality inventory devised by Theodore Millon to

use the best features of the MMPI, minimize the limitations of the MMPI, and reflect the advances in test construction, diagnostic assessment, and psychopathology since the MMPI was developed (Millon, 1982).

The Vietnam veteran literature has indicated this population is difficult to assess for a variety of reasons. The MMPI scale developed by Keane, Malloy, and Fairbank (1984) may be useful clinically but its application has been limited to research. It would be valuable to extend the research of Keane et al. to include other psychometric inventories. It would be valuable to determine if an instrument such as the MCMI could measure the PTSD syndrome.

The present study seeks to investigate the utility of the MCMI in identifying the PTSD syndrome in Vietnam veterans. The aims of this study are to construct and cross-validate a PTSD scale derived from the MCMI, and to determine the extend to which the scale can accurately classify PTSD veterans from non-PTSD veterans. If such a scale demonstrated a high rate of accurate classifications, a high score on the scale could be interpreted as an indication that the syndrome is present. Clearly, this research is exploratory in

nature. It is hypothesized that a) the PTSD scale is a reliable measure, and b) the PTSD scale is valid, that is, it will be significantly correlated with an external criterion, a diagnosis of PTSD.

Prior to a description of the methodology used in this study, a brief description of the different approaches to test construction is helpful in understanding the procedure used.

Test Construction

The research literature has revealed various approaches to the construction of tests. The most basic issue in the construction of any test is the selection of items. Two approaches for selecting items are the method of empirical keying or criterion keying, and homogeneous scaling. The choice of a method frequently depends on the objectives of the test. The argument between these two approaches has been well covered in the literature (Hase & Goldberg, 1967; Jackson, 1971; Meehl, 1945). This discussion of the two methodologies will be purely descriptive.

The method of empirical keying is a statistical approach to test construction. The choice of items is based not on any underlying theory but on empirical results. This method is based on item validity and

internal consistency (homogeneity). Items are selected because they have high correlations with an external criterion and at the same time, low item intercorrelations. Items are chosen because of their ability to discriminate. What the items state (i.e., the content) are secondary in importance.

Briefly, the empirical procedure used in this approach involves contrasted groups. Two groups, a criterion group and a control group are used. An item analysis is performed to identify those items on which the two groups differ. Those items that survive the item analysis are retained and comprise the items of the test.

In contrast, homogeneous scaling is a theoretical approach to item selection. Unlike empirical keying, item content is important and items are selected based on their internal consistency or homogeneity. The goal is to have items correlate with each other since these items are measuring a specific, particular characteristic (Ghiselli, Campbell, & Zedeck, 1981).

The method chosen for this study is empirical keying. Items will be selected based on their empirical relationship to the external criterion, namely, a clinical judgment of whether the subject meets each of

the DSM-III PTSD criteria. Criterion keying was chosen because the MCMI is often administered as part of the diagnostic assessment process, and a scale derived from the MCMI may be administered as part of the assessment process with relative ease compared to a theoretically generated measure. Furthermore, this approach has resulted in the successful development of other special scales for the MMPI (Clopton, 1978).

CHAPTER III

METHOD

Subjects

Validation Sample. Ninety subjects were obtained from the archival records of five Operation Outreach Vet Centers located in the midwestern region of the United States, and from VA Lakeside Medical Center in Chicago, Illinois. These subjects composed two groups. The control group, designated the non-PTSD group (n=45) consisted of 1 female and 44 male veterans who had received psychological services on an outpatient basis at one of several Vet Centers. These subjects were between the ages of 25 and 51. The average age was 36.59 years. The criterion group, designated the PTSD group (n=45) consisted of 1 female and 44 male veterans. Of the 45 subjects, 32 had received similar services on an outpatient basis at a Vet Center. The remaining 13 subjects were from a clinical population of psychiatric inpatients from a general psychiatry unit at VA Lakeside Medical Center. The group ranged in age from 32 to 42 years and the average age was 37.20 years.

All subjects, with the exception of the 13

inpatients, were grouped into PTSD and non-PTSD categories based on a PTSD Symptom Checklist. The primary therapist or staff member assigned to follow the subject was asked to complete the checklist. This checklist indicated the total number of DSM-III criteria for PTSD met by each subject. A subject was assigned to the PTSD group if items (i.e., criteria) of the checklist which corresponded to a DSM-III diagnosis of PTSD had been marked present. Thirty-two subjects were assigned to the PTSD group as a result of these procedures. The mean number of DSM-III PTSD criteria met by subjects assigned to this group was 6.56.

The remaining 13 subjects that comprised the PTSD group were included as part of the criterion group based on a diagnosis of PTSD by a multidisciplinary treatment team.

Subjects for the non-PTSD group were selected from the remaining group of subjects who failed to meet the criteria for inclusion in the PTSD group. Subjects who had met the least number of PTSD criteria were chosen and assigned to the non-PTSD group (n=45). The diagnoses for this group were unavailable but assumed to be a non-PTSD diagnosis. The mean number of DSM-III criteria met by this group was 1.84.

Cross-Validation Sample. Eighty-six subjects comprising two groups were obtained from the archival records of an inpatient stress disorders unit (n=43) and an inpatient general psychiatry unit (n=43) from, respectively, VA North Chicago Medical Center and VA Lakeside Medical Center.

All subjects for the PTSD group were obtained from the stress disorders unit. These subjects were diagnosed with PTSD by a multidisciplinary assessment team according to DSM-III criteria prior to their admission to the unit. These subjects ranged in age from 32 to 45, with a mean age of 37.35 years. Subjects for the non-PTSD group were selected from a pool of approximately 1,476 inpatient records from a general psychiatry unit. These veterans were diagnosed by a multidisciplinary treatment team, and as a group, carried a variety of diagnoses, none of which were PTSD. Forty-three subjects matched with PTSD subjects for the variables of age, race and gender were selected. These subjects were also between the ages of 32 and 45, with an average age equal to 37.35 years. Both groups included 7 Blacks, 35 Whites, and 1 Hispanic. All subjects were male.

Measures

Millon Clinical Multiaxial Inventory. The Millon Clinical Multiaxial Inventory (MCMI, Millon, 1982), is a 175-item personality inventory with a true/false response format. Geared towards an eighth grade reading level, this inventory, designed to assess and differentiate among enduring personality characteristics and more transient clinical symptoms, yields Base Rate Scores on 20 clinical scales and three validity scales. The clinical scales include eight basic personality styles, three pathological personality syndromes and nine symptom disorders. The clinical scales measure persistent personality features, current symptom states and the level of pathological severity. Based on Millon's theory of personality and psychopathology (Millon, 1969, 1981), the MCMI is organized to identify clinical patterns that may be related to the diagnostic categories of the DSM-III.

The MCMI is a self-administered instrument. The instructions for completing the inventory are printed on the front page of the test booklet and are self-explanatory. It states:

> The following pages contain a list of statements that people use to describe themselves. They are printed here to help you in describing your feelings and attitudes. Try to be as honest and serious as you can in marking the statements since the results will be used to help your doctor in learning about your problems and in planning to help you (Millon, 1982, p. 8).

Millon (1982) provides evidence for the reliability and validity of this instrument. Data on the instrument's reliability are presented in terms of test-retest reliability over one and five week intervals. Coefficients between the range of .91 and .61 were reported. A high degree of internal consistency was indicated for the scales, with KR 20 coefficients in the range between .95 and .70, with the exception of one scale (psychotic delusion) that attained a coefficient of only .58.

Data on the validity of the MCMI were based on cross-validation studies of the configural interpretation of the test. A cross-validation sample that was highly similar to the original validation sample was used. Reported results of the cross-validation study are impressive. Clinical judgements and ratings obtained were identical and the overall pattern of valid-to-false positives ratios found were remarkably robust.

PTSD Symptom Checklist. A checklist was completed by the primary therapist or a Vet Center staff member assigned to follow a particular subject for each subject who was administered an MCMI. The function of this checklist was to collect demographic and diagnostic data about subjects. The demographic information requested included subjects' age, gender, marital status, and racial background. Service information regarding the branch of service and level of combat were also obtained. The diagnostic information requested was the number of DSM-III inclusion criteria for PTSD met by each subject. This was obtained by having the therapist or staff member indicate the presence or absence of PTSD criteria listed on the checklist (see Appendix A).

Procedure

All subjects were individually administered an MCMI as part of the routine assessment or admission procedures at each respective institution. Subjects from VA Lakeside Medical Center and VA North Chicago Medical Center were tested between 1983 and 1986. Subjects from the Vet Centers were tested between 1984 and 1985.

Scale Construction. The method of empirical keying was used to select items from the MCMI for

inclusion in the PTSD scale. According to this method, items are selected based on item validity and not on any underlying theory (Ghiselli, Campbell, & Zedeck, 1981; Wiggins, 1973). An item analysis was performed to identify potential items for the scale. This was accomplished by comparing the number of "true", "false", and blank responses by the criterion (PTSD) and comparison (non-PTSD) subjects for each MCMI item. The frequency with which PTSD and non-PTSD subjects responded in a true or false direction for each item were cross-tabulated.

Items which reflected the greatest difference in responding by subjects in the two groups comprised the initial pool of items for inclusion in the scale. Twenty-five items were identified from this procedure. Next, for each of the 25 items, the magnitude of the response differences was recorded and direction of the response differences was determined. Chi-square tests were used to determine whether the response frequencies of the two groups differed significantly. Only those items that produced chi-squares with a probability equal to or less than .10 were retained. Seventeen of the initial 25 items were kept for inclusion in the new scale as a result of this procedure (see Table 1). The

Table 1

Items Included in the Empirically-Derived PTSD Scale of the MCMI

---

17. I have a drinking problem that I've tried unsuccessfully to end (T)

21. I keep my room well organized with everything in the correct place all of the time (T)

24. I'll make a sharp and critical remark to someone if they deserve it (T)

38. Under no circumstances do I ever let myself be tricked by people who say they need help (T)

42. I am a very agreeable and submissive person (F)

52. Drinking alcohol on my part has never caused any real problems in my work (F)

53. Lately my strength seems to be draining out of me, even in the morning (T)

64. If someone criticized me for making a mistake, I would quickly point out some of the person's mistakes (T)

68. I very often lose my ability to feel any sensations in parts of my body (T)

72. Lately, I can't seem to sleep, and wake up just as tired as when I went to bed (T)

82. I can't understand it but I seem to enjoy hurting persons I love (T)

84. I am ready to fight to the death before I let anybody take away my self-determination (T)

85. Since I was a child, I had always had to watch out for people who were trying to cheat me (T)

Table 1 (continued)

110. Looking back on my life, I know I have made others suffer as much as I have suffered (T)
146. Others have tried to do me in, but I have the will power to overcome them (T)
149. I have great respect for those in authority over me (F)
170. When I am with others I like to be the center of attention (F)

direction in which these 17 items would be scored were keyed in the direction of the criterion group.

Validation. The 17-item scale was applied to the MCMI records of the validation sample. Afterwards, an analysis of the frequency distribution of the scores from this scale was performed to determine an optimal cutting score for the scale. The cutting score for this scale was eight.

The accuracy of the scale, with a cutoff score of eight was examined by determining the number of correctly and incorrectly identified cases within the validation sample. A total hit ratio was determined using the Cohen's kappa statistic. Cohen's kappa was used because it discounts chance from the ratio and proved to be a stringent way of calculating the proportion of correctly identified cases.

Cross-Validation. The 17-item scale was applied to the 86 records of the cross-validation sample. A cutting score of 8 was used and the total hit ratio was determined for this second sample using Cohen's kappa.

CHAPTER IV

RESULTS

Scale Scores

The means and standard deviations of the PTSD scale scores for the criterion and comparison subjects from the validation sample and the cross-validation sample were submitted to *t*-tests. Both the *t*-test performed on the 17 item scale of the PTSD and non-PTSD subjects from the validation sample, and the *t*-test conducted on the same scale for criterion and comparison subjects of the cross-validation sample were significant, $t(88) = 5.95$, $p<.0001$, and $t(84) = 2.12$, $p<.05$, respectively. This indicates PTSD and non-PTSD subjects did not repond to the 17 items in a similar way and the scale is able to measure the differential responding by subjects in both samples. The mean scale score for PTSD subjects in the validation sample was 9.51, with a standard deviation of 2.84. The mean for the non-PTSD comparison group was 6.07, with a standard deviation of 2.65. Similarly, in the cross-validation sample, the mean scale score was 9.44 with a standard deviation of 2.34. The mean and standard deviation for

the non-PTSD group was 8.24 and 2.88 respectively. Although the t-test on the cross-validation sample led to significant results, there was an extensive overlap in the distribution of scores for the PTSD group and non-PTSD comparison group (see Figure 1). Hence, these results indicate that though the scale is able to measure differential responding by the two subject groups, the scale is limited in its abililty to pick up on differences when it is applied to a sample other than the one used in its construction.

Group differences between samples were also examined. A t-test performed on the mean scale scores of the two PTSD samples was not significant, $t(86) = .05$, $p>.05$. Furthermore, a t-test conducted on the mean scale scores of the two non-PTSD samples also was not significant, $t(86) = 1.42$, $p>.05$. Thus, there does not appear to be differences among the two PTSD groups or the two non-PTSD groups in the frequency with which they responded to items in the keyed direction.

Reliability

Two estimates of reliability were obtained. For the validation sample, coefficient alpha was .58 which indicates a low reliability for the 17 item PTSD scale. This reliability measure evaluates the scale's internal

Figure Caption

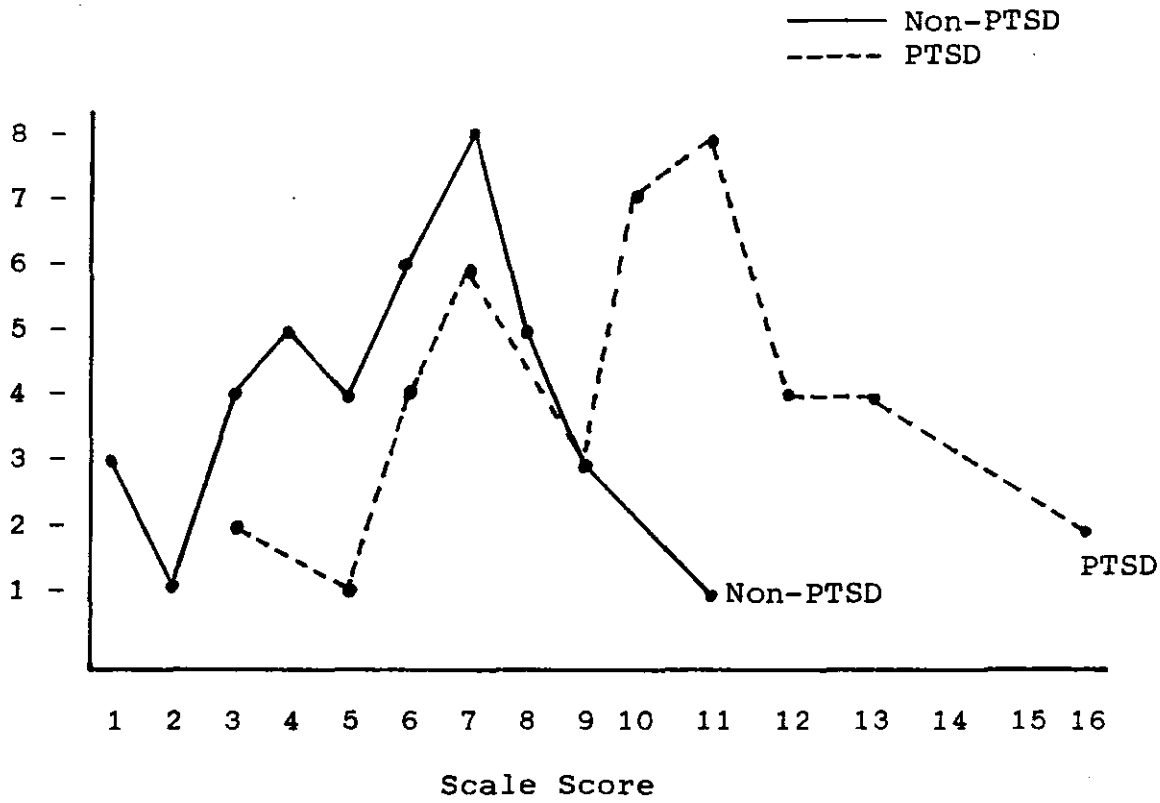

Figure 1. Frequency Distribution of Scale Scores for PTSD and Non-PTSD Subjects.

consistency and estimates the homogeneity of the items within the scale. It compares the variability of all the subjects on each item with the variability of all the subjects on the total test score. In the cross-validation sample, coefficient alpha was .43. Although coefficient alpha is expected to be low, the reduced value of coefficient alpha between samples indicates the item consistency of the scale is poor.

A split-half reliability estimate using the unequal length Spearman-Brown formula was .57. This coefficient also indicates low reliability. The split-half reliability coefficient indicates the correlation between the two halves of the scale and may be used to estimate the expected correlation between scores on one administration of the scale and scores that would be obtained if the scale was readministered. The reliability estimate indicates there is a considerable amount of error variance and that approximately 68% of the "true variance" would not be accounted for in future measures.

Validity

Criterion-related validity was assessed by determining the extent to which the scale, with a cutoff score of eight, could correctly classify subjects into their respective groups. The number of "hits", that is,

frequency with which a subject's diagnostic group was accurately identified, and the number of "misses", or incorrectly identified cases was recorded. This is summarized in Table 2. Seventy-one percent (64 of 90) of all cases were correctly classified when a cutoff score of eight was used and 29% (26 of 90) were incorrectly classified. There was an equal number of false positives and false negatives. A total hit ratio or the proportion of correctly identified cases ("hits") to the total number of cases was calculated using a Cohen's kappa statistic. Cohen's kappa was .42, which was significant at the .01 level. This indicates that the scale is able to differentiate and correctly identify PTSD subjects from non-PTSD subjects with limited success.

Cross-Validation

A sample other than the one used to develop the scale was used to cross-validate the scale's ability to differentiate PTSD and non-PTSD subjects. The percentage of correct classifications was calculated and this is summarized in Table 3. The number of cases correctly classified among the groups was disproportionate. There was a higher rate of accuracy in the PTSD than in the comparison group. Seventy-nine percent (34 of 43) of the PTSD subjects and 37% (16 of

Table 2

Frequency of Hits and Misses for the Validation Sample

	Actual Diagnostic Group		
Diagnostic Decision	PTSD (criterion)	non-PTSD (control)	
PTSD	32	13	
non-PTSD	13	32	N=90
	n = 45	n = 45	

Table 3

Frequency of Hits and Misses for Cross-Validation Sample

	Actual Diagnostic Group		
Diagnostic Decision	PTSD (criterion)	non-PTSD (control)	
PTSD	34	27	
non-PTSD	9	16	N=86
	n = 43	n = 43	

43 of the non-PTSD subjects were classified correctly. The total percentage of "hits" for the two groups was 58%. Furthermore, there was a disproportionate number of "misses", with three times as many false positives than false negatives. Cohen's kappa was .16, which is not significant at the .05 level. This indicates the scale is not able to differentiate PTSD subjects from non-PTSD subjects when in the cross-validation the scale uses an identical cutoff score as in the validation sample and is applied to a sample other than the one used in its development.

CHAPTER V

DISCUSSION

The purpose of the present study was to examine the utility of the Millon Clinical Multiaxial Inventory (MCMI) in the assessment and identification of posttraumatic stress disorder in Vietnam Veterans. The aims of the study were the development and cross-validation of a PTSD scale derived from the MCMI. The results of the psychometric analyses failed to support the hypotheses that a) the scale developed from the MCMI is a reliable measure and b) that the scale is valid, that is, it correlates significantly with the external criterion of a PTSD diagnosis.

An assessment of reliability is one measure of an instrument's value. One way of describing reliability is that it measures the amount of error variance. As error variance is reduced, reliability increases and the remaining variation is more likely to reflect true differences (Brown, 1983). The findings suggest that the scale is an unreliable measure and that the value of the scale is questionable since the scores obtained on the scale are unlikely to reflect true subject

differences but more likely to be a reflection of error variance.

The results also suggested the scale has questionable validity. The scale demonstrated validity on the first sample, the sample from which the scale was developed, but did not demonstrate its cross-validation. Considerable shrinkage occurred in the number of correctly identified cases between the validation and cross-validation samples. Although the percentages of correctly identified cases of PTSD were comparable in the first and second sample (71% and 79% respectively), the percentages of correctly identified non-PTSD cases between samples (71% in the first sample, 37% in the second sample) were not comparable. Similarly, the total percentage of incorrectly identified cases or "misses" for the first sample were equivalent (29%) but disproportionate in the second sample (63% and 21%), with three times more false positives than false negatives. It appears the scale is equally likely to correctly identify PTSD cases between the samples but less able to distinguish subjects in the control group, who were more likely to be misclassified as PTSD subjects than correctly classified in their own group.

The results of the cross-validation suggests that in terms of subjects with PTSD, the scale has limited value in their identification and correct classification. The scale is less able to correctly classify control subjects as belonging to a PTSD or non-PTSD category.

A number of variables may account for the shrinkage. The reduction in the reliability (i.e., coefficient alpha) from the first and second sample may reflect differences between the samples in the way that subjects responded to the test items. This is a reasonable explanation since the first sample was composed primarily of outpatients and subjects from the second sample were inpatients. Inpatients and outpatients differ in a number of ways, such as in the degree or severity of pathology. The distinctions between an inpatient population, particularly between PTSD and non-PTSD subjects may not be clear cut, and this blur in distinction may account for the greater frequency of Type I errors in the second sample.

But results of a *t*-test suggested the two groups of PTSD and non-PTSD subjects from each sample were not dissimilar on their mean scale scores. It may be speculated that the two samples were different from one

another in other ways that were not identified by the general group labels "PTSD" and "non-PTSD".

Since the shrinkage may be due to the highly sample specific cutting score, a possible solution and a direction for future research would be to cross-validate the scale on new sample of outpatients rather than inpatients since the cutoff score was based on an outpatient population. A second alternative is to derive another PTSD scale, based on an inpatient sample and with a new cutting score, for use with an inpatient population. This new scale would be cross-validated on another sample of inpatients to determine the validity of the new scale. Perhaps the problem is that a higher cutoff score needed to be used with the population of inpatients relative to the outpatient population.

Another direction for future research would be to determine the best possible cutoff score that may be used with either the population of inpatients or outpatients by repeating the scale construction process, determining a new cutting score for several samples of inpatients or outpatients, then averaging the scores to determine the score that would be the best possible predictor.

The different classification rules used to categorized subjects into the PTSD and non-PTSD groups for both samples also may account for some of the shrinkage. The criterion measure for the first sample was the presence or absence of a number of indicator criteria for PTSD. The criterion measure for the second sample was that of a multidisciplinary assessment team that included but was not solely based on the presence of specific DSM-III criteria for PTSD. Thus, the low validity exhibited in the cross-validation of the scale may be due to the lack of a "pure" or homogeneous PTSD group in the first sample.

There may be a statistical explanation for the observed lack of effectiveness of the scale. Whenever a large number of statistical comparisons are made, the probability of obtaining "significant" findings is increased, based entirely on chance. Hence, in the present study with 175 correlations and an alpha equal to or less than .10, some of the 17 items which comprised the scale may have been reached significance in the item analysis purely by chance. At the recommendation of Clopton (1978), it should have been determined that the items selected could reliably differentiate the criterion and comparison groups, and

that the items did not reach significance purely on chance. One solution would have been to divide the criterion and comparison groups in half and perform separate item analyses on each half of the group. Items would be included as part of the new scale only if it significantly differentiated between the two groups in both item analyses (Clopton, 1978). This would be an effective method of determining whether items for inclusion in a scale were based solely on chance since the probability of an item attaining statistical significance by chance in the two separate analyses would be low.

Another possible reason for the scales' lack of effectiveness may be that the MCMI just does not have the items necessary for the development of a scale with this objective. An alternative may be the employment of the method of homogeneous scaling for the development of a PTSD scale that may be used to indicate the presence or absence of the PTSD syndrome in Vietnam veterans.

In summary, it has been concluded that the PTSD scale derived in this study has questionable value as a clinically useful tool. The scale failed to demonstrate an adequate level of reliability or validity when it was applied to a sample independent of the one that was used

in its development. Several factors were identified to account for these results and a number of suggestions were made as possible solutions and/or directions for future research. It was suggested that an attempt be made to develop a PTSD scale based on another method of scale development, the theoretical or face validity approach.

REFERENCES

Antoni, M., Tishcer, P., Levine, J., Green, C., & Millon, T. (1985). Refining personality assessment by combining MCMI high point profiles and MMPI codes, part I: MMPI code 28/82. Journal of Personality Assessment, 49, 392-398.

Archibald, C.H., Long, D.M., Miller, G., & Tuddenham, R. (1962). Cross stress reacion in combat -- a fifteen year followup. American Journal of Psychiatry, 119, 317.

Atkinson, R.M., Henderson, R.G., Sparr, L.F., & Deale, S. (1982). Assessment of Viet Nam veterans for posttraumatic stress disorder in veterans administration disability claims. American Journal of Psychiary, 139, 1118-1121.

Blank, A.S. (1979). 1st Training Conference Papers, Operation Outreach, Washington, D.C., Veterans Administration (mimeo).

Blank, A.S. (1982). Stresses of war: The example of Viet Nam. In L. Goldberg & S. Breznit (Eds.), Handbook of stress. New York: The Free Press.

Block, H.S. (1969). Army clinical psychiatry in the combat zone. American Journal of Psychiatry, 126, 401-406.

Bourne, P.G. (1970). Military psychiatry and the Vietnam experience. American Journal of Psychiatry, 127, 481-488.

Bourne, P.G. (1972). The Viet Nam veteran: Psychosocial casualties. Psychiatry in Medicine, 3, 23-27.

Brill, N.Q., & Beebe, G.W. (1955). A follow-up study of war neuroses. Veterans Administration Medical Monograph. Washington, D.C.

Brown, F.G. (1983). Principles of education and psychological testing. New York: Holt, Rinehart & Wiston.

Burke, H.R., & Mayer, S. (1985). The MMPI and the post-traumatic stress syndrome in Vietnam era veterans. Journal of Clinical and Consulting Psychology, 41, 152-156.

Carter, J. (1978). Message to Congress, Vietnam era veterans. Weekly Compilation Presidential Documents, 14, 1737-1742.

Cavenar, J.O., & Nash, J.L. (1976). Combat and the normal character: War neurosis in Vietnam veterans. Comparative Psychiatry, 17, 648-653.

Center for Policy Research (1980). Vietnam Era Research Project: Preliminary Report. New York: Center for Policy Research.

Clopton, J.R. (1978). MMPI scale development methodology. Journal of Personality Assessment, 42, 148-151.

Dalton, J.E., Garte, S.H., Lips, O.J., & Ryan, J.J. (1986). Psychological assessment instruments in PTSD treatment programs. VA Practitioner, May, 41-51.

DeFazio, V.J., Rustin, S., & Diamond, A. (1975). Symptom development in Vietnam era veterans. American Journal of Orthopsychiatry, 45, 158-165.

Diagnostic and Statistical Manual, Volume I (1952). Washington, D.C.: American Psychiatric Association.

Diagnostic and Statistical Manual, Volume II (1968). Washington, D.C.: American Psychiatric Association.

Diagnostic and Statistical Manual, Volume III (1980). Washington, D.C.: American Psychiatric Association.

Downs, F. (1979) Vietnam veterans desperately need help. Center Magazine, 12, 47-48.

Egendorf, A., Kadushin, C., Laufer, R., Rothbart, G., & Sloan, L. (1981). Legacies of Viet Nam. Washington, D.C.: U.S. Government Printing Office.

Fairbank, J.A., Keane, T.M., & Malloy, P.F. (1983). Some preliminary data on the psychological characteristics of Vietnam veterans with posttraumatic stress disorders. Journal of Consulting and Clinical Psychology, 51, 912-919.

Fairbank, J.A., Langley, M.K., Jarvie, G.J., & Keane, T.M. (1981). A selected bibliography on posttraumatic stress disorders in Vietnam veterans. Professional Psychology, 12, 578-586.

Fairbank, J.A., McCaffrey, R.J., & Keane, T.M. (1985). Psychometric detection of fabricated symptoms of post-traumatic stress disorder. American Journal of Psychiatry, 142, 501-503.

Fendrich, J.M. (1971). Today's veteran. Paper presented at the 16th Annual Veterans Administration Conference, Perry Point, MD, V.A. Hospital.

Figley, C.R. (Ed.) (1978). Stress disorders among Vietnam veterans. New York: Brunner/Mazel.

Figley, C., & Leventman, S. (1980). Strangers At Home. New York: Praeger.

Ford, C., & Spaulding, R. (1973). The Pueblo incident: A comparison of factors related to coping with extreme stress. Archives of General Psychiatry, 29, 340-343.

Foy, D.W., Sipprelle, C.R., Rueger, D.B., & Carroll, E.M. (1984). Etiology of posttraumatic stress disorder in Vietnam veterans: Analysis of premilitary, military, and combat exposure influences. Journal of Consulting and Clinical Psychology, 52, 79-87.

Frye, J.S., & Stockton, R.A. (1982). Discriminant analysis of posttraumatic stress disorder among a group of Viet Nam veterans. American Journal of Psychiatry, 139, 52-56.

Ghiselli, E.E., Campbell, J.P., & Zedeck, S. (1981). Measurement theory for the behavioral sciences. San Francisco: W.H. Freeman and Company.

Goodwin, D. (1986). Anxiety. New York: Oxford University Press.

Harris, L. (1980). Myths and realities: A study of attitudes toward Viet Nam era veterans. Washington, D.C.: US Government Printing Office.

Hase, H.D., & Goldberg, L.R. (1967). The comparative validity of different strategies of deriving personality inventory scales. Psychological Bulletin, 67, 231-248.

Hocking, F. (1970). Extreme environmental stress and its significance for psychopathology. American Journal of Psychotherapy, 24, 4-26.

Horowitz, M.J., & Solomon, G.F. (1975). A prediction of delayed stress response syndromes in Vietnam veterans. Journal of Social Issues, 31, 67-80.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. Psychosomatic Medicine, 41, 209-218.

Hyer, L., & Boudewyn, P.A. (1987). The 8-2 MCMI code in a PTSD typology. Center for Stress Recovery Newsletter, 4, 7-8.

Jackson, D.N. (1971). The dynamics of structured personality tests: 1971. Psychological Review, 78, 229-248.

Jelinek, M.J., & Williams, T. (1984). Post-traumatic stress disorder and substance abuse in Vietnam combat veterans: Treatment problems, strategies and recommendations. Journal of Substance Abuse Treatment, 1, 87-97.

Kadushin, C., Boulanger, G., & Martin, J. (1981). Long-term stress reactions: Some causes, consequences, and naturally occurring support systems. In Legacies of Vietnam: Comparative Adjustment of Vietnam Veterans and Their Peers. (Vol. IV) Washington, D.C.: U.S. Government Printing Office.

Kardiner, A. (1959). Traumatic neurosis of war. In S. Arieti (Ed.), American Handbook of Psychiatry, (Vol. 1). New York: Basic Books.

Keane, T.M., Malloy, P.F., & Fairbank, J.A. (1984). Empirical development of an MMPI subscale for the assessment of combat-related posttraumatic stress disorder. Journal of Consulting and Clinical Psychology, 52, 888-891.

Laufer, R.S. (1985). Irrational reactions to post-traumatic stress disorders and Viet Nam veterans. In S.M. Sonnenberg, A.S. Blank, & J.A. Talbott (Eds.), The trauma of war: Stress and recovery in Viet Nam veterans. Washington, D.C.: American Psychiatric Press.

Laufer, R.S., Yager, T., Frey-Wouters, E., & Donnellan, J. (1981). Legacies of Viet Nam: Post-War Trauma, Social and Psychological Problems of the Viet Nam Veteran in the Aftermath of the Viet Nam War. (Vol. III) Washington, D.C.: U.S. Government Printing Office.

Lifton, R.J. (1973). Home from the war: Viet Nam veterans, neither victims nor executioners. New York: Simon & Schuster.

Lund, M., Foy, D., Sipprelle, C., Strachan, A. (1984). The combat exposure scale: A systematic assessment of trauma in the Vietnam war. Journal of Clinical Psychology, 40, 1323-1328.

Lynn, E.J., & Belza, M. (1984) Factitious posttraumatic stress disorder: The veteran who never got to Vietnam. Hospital and Community Psychiatry, 35, 697-701.

Malloy, P.F., Fairbank, J.A., & Keane, T.M. (1983). Validation of a multimethod assessment of posttraumatic stress disorders in Vietnam veterans. Journal of Consulting and Clinical Psychology, 51, 488-494.

Meehl, P.E. (1945). The dynamics of 'structured' personality tests. Journal of Clinical Psychology, 1, 296-303.

Millon, T. (1969). Modern psychopathology. Philadelphia: W.B. Saunders.

Millon, T. (1981). Disorders of personality: DSM-III Axis II. New York: John Wiley & Sons.

Millon, T. (1982). Millon Clinical Multiaxial Inventory manual. Minneapolis, Minnesota: National Computer Systems, Inc.

Morganthau, T., Shabad, S. (1981). The troubled Vietnam vet. Newsweek, 30, 8.

Nace, E.P., Meyers, A.L., & O'Brien, C.P. (1977). Depression in veterans two years after Viet Nam. American Journal of Psychiatry, 134, 167-170.

Penk, W.E., Robinowitz, R., Roberts, W.R., Patterson, E.T., Dolan, M.P., & Atkins, H.G. (1981). Adjustment differences among male substance abusers varying in degree of combat experience in Vietnam. Journal of Consulting and Clinical Psychology, 49, 426-437.

Robert, J.A., Ryan, J.J., McEntyre, W.L., McFarland, R.S., & Lips, O.J. (1985). MCMI characteristics of DSM-III post-traumatic stress disorder in Vietnam veterans. Journal of Personality Assessment, 49, 226-230.

Robins, L.N. (1974). The Vietnam drug user returns. Special Action Office monograph, Series A, No. 2. Washington. D.C.: U.S. Government Printing Office.

Robins, L.N., & Helzer, J.E. (1975). Drug abuse among Viet Nam veterans--three years later. Medical World News, 27, 44-49.

Santoli, A. (1981). After Vietnam: The long battle to readjust. Family Weekly, July 5, p. 6.

Scurfield, R.M., & Blank, A.S. (1985). A guide to obtaining a military history from Viet Nam veterans. In S.M. Sonnenbery, A.S. Blank, & J.A. Talbott (Eds.), The trauma of war: Stress and recovery in VietNam veterans. Washington, D.C.: American Psychiatric Press.

Sierles, F.S., Chen, J., McFarland, R.E., & Taylor, M.A. (1983). Posttraumatic stress disorder and concurrent psychiatric illness: A preliminary report. American Journal of Psychiatry, 140, 1177-1179.

Sierles, F.S., Chen, J. Messing, M., Besyner, J., & Taylor, M. (1986). Concurrent psychiatric illness in non-hispanic outpatients diagnosed as having posttraumatic stress disorder. Journal of Nervous and Mental Disease, 174, 171-173.

Solomon, G.F. (1971). Psychiatric casualties of the Vietnam conflict with particular reference to the problem of heroin addiction. Modern Medicine, 38, 199-201, 211, 215.

Stenger, C.A. (1974). Perspectives on the post-Viet Nam syndrome. Newsletter for Research in Mental Health, 16, 1-4.

Strayer, R., & Ellenhorn, L. (1975). Vietnam veterasn: A study exploring adjustment patterns and attitudes. Journal of Social Issues, 31, 81-94.

Thienes-Hontos, P., Watson, C.G., & Kucala, T. (1982). Stress-disorder symptoms in Vietnam and Korean war veterans. Journal of Consulting and Clinical Psychology, 50, 1982.

Van Putten, T., & Emory, W.H. (1973). Traumatic neurosis in Vietnam returnees. Archives of General Psychiatry, 29,. 695-698.

Walker, J.I., & Cavenar, J.O. (1982). Vietnam veterans--their problems continue. Journal of Nervous and Mental Disease, 170, 174-180.

Wiggins, J.S. (1973) Personality and prediction: Principles of personality assessment. Reading, Mass.: Addison-Wesley.

Wilkinson, C.B. (1983). Aftermath of a disaster: The collapse of the Hyatt Regency Hotel skywalks. American Journal of Psychiatry, 140, 1134-1139.

Williams, T. (Ed). (1980). PTSD of the Vietnam Veteran. Cincinnati: Disabled American Veterans.

Wilson, J.P. (1977). Identity, Ideology, and Crisis: The Viet Nam Veteran In Transition, Part I. Unpublished monograph, Cleveland: Cleveland State University.

Wilson J.P. (1978). Identity, Ideology and Crisis, the Vietnam Veteran in Transition, Part II: Final Report to the Disabled Veterans Association. Cleveland: Cleveland State University.

Wolf, S., & Ripley, H. (1947). Reactions among allied POW's subjected to three years of imprisonment and torture by the Japanese. American Journal of Psychiatry, 104, 180-193.

APPENDIX A

INFORMATION SHEET

Vet Center Client #

9 10 11 12 13 14 15 16 17

Staff ID #

Vet Center

Address _____

PERSONAL DATA

Year of Birth 22 23

SEX M F 24

25

RACIAL/ETHNIC BACKGROUND

1. White (non Hisp)
2. Black (non Hisp)
3. Hispanic
4. Alaskan (Aleut Esk)
5. Amer Indian (Res)
6. Amer Indian (Not Res)
7. Asian/Pacific Islander
8. Other race/Ethnicity
9. Declined to answer
10. Undetermined

MARITAL STATUS 26 EDUCATIONAL LEVEL 27 28 EMPLOYMENT STATUS 29

SERVICE DATA

I. WHAT CORP SERVICE? CHECK ONE OR MORE I II III IV

II. BRANCH OF SERVICE 46

III. EXPOSURE TO WAR-RELATED STRESS

HEAVY MODERATE LIGHT NONE

10-5565a

PTSD SYMPTOM CODES (May or may not be military-related)

Re-experiencing Symptoms (Per DSM-III)

40 = Recurrent and intrusive recollections of the event
41 = Recurrent dreams of the event
42 = Sudden acting or feeling as if the traumatic event were reoccuring, because of an association with an environmental or ideational stimulus

Numbing or Reduced Involvement Symptoms (Per DSM-III):

43 = Markedly diminished interest in one or more significant activities
44 = Feeling of detachment or estrangement from others
45 = Constricted affect

Autonomic and other symptoms (Per DSM-III):

46 = Hyperalertness or exaggerated startle response
47 = Sleep disturbance
48 = Survivor guilt
49 = Memory impairment or trouble concentrating
50 = Avoidance of activities that arouse recollection of the traumatic event
51 = Intensification of symptoms by exposure to events that symbolize or resemble the traumatic event

Other PTSD symptoms (but not cardinal PTSD symptoms per DSM-III):

52 = Sudden acting or feeling as if the traumatic event were reoccuring because of an association with, or a triggering by, an emotional or feeling state that

COMMENTS: _____

APPROVAL SHEET

The thesis submitted by Joan Hong has been read and approved by the following committee:

Dr. Alan S. DeWolfe, Director
Professor, Psychology, Loyola

Dr. James Johnson
Professor, Psychology, Loyola

Dr. James Choca
Chief Psychologist, VA Lakeside Medical Center

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

12/4/07
Date

Alan S. deWolfe
Director's Signature