The Conditioned Emotional Response: A Sub-Class of the Chronic and Delayed Post-Traumatic Stress Disorder

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This article introduces data drawn from clinical experiences which support the contention that the nuclear pathology of certain chronic and delayed post-traumatic stress disorders of war rests in the persistence of a conditioned emotional response. This concept suggests the need for a re-examination of the psychobiological concomitants of the state, a re-evaluation of current diagnostic and therapeutic processes and development of alternative treatment methodologies.

This data evolved from observations of immediate therapeutic response of narcosynthetic abreaction in Vietnam combat veterans who reported symptoms of post-traumatic stress disorder either in chronic or delayed forms as defined in DSM-III. During World War II and later in recognized cases resulting from catastrophes occurring in civilian life, this technique was utilized extensively to bring about relief from seriously impairing major behavioral symptoms for those seen with the condition in the acute state.

Working within the framework of a pain clinic, a general hospital psychiatric consultation service and an inpatient psychiatry service in a Veterans Administration Hospital, a number of hitherto unrecognized cases of the chronic and delayed post-traumatic stress disorder were discovered. These cases presented with continuing behavioral abnormalities exhibited in explosive episodes of rage, dissociative states with acting out of combat defensiveness (flashbacks), repetitive panic (anxiety) attacks and abnormal pain-complaining behavior. All the
THE CONCEPT

In 18 of the 94 cases, the clinical history and examination suggested a persistent intensely repressed affect unalleviated by previous therapeutic approaches. In these cases a decision was made to initiate narcosis. The authors recognized that abreaction, if obtainable, was unlikely to provide more than an immediate alleviation of tension. To achieve enduring benefit, therapeutic “working through” of material produced during the abreactive state would be necessary through either group or individual treatments.

The histories from some of the patients who were first seen suggested persistence of startle response to loud sounds. Considering the likelihood that the abreactive material would be forgotten in whole or in part following recovery of full consciousness from the subnarcotic administration of a barbiturate, the traditional technique of narcosis was modified as follows:

- The abreactive response was stimulated by exposure to an auditory tape recording consisting of a sequence of 30 seconds of musical sounds, 30 seconds of silence and 30 seconds of sounds typical of the Vietnam combat experience with avoidance of verbal suggestion of time and place regression to the combat site.
- An audio-visual television recording was made of the abreactive response.
- A review of the audio-visual recording of the abreactive behavior was completed with the patient in the presence of the therapist after recovery of consciousness. The patient was offered the opportunity of an additional review of the recording alone or with others whom he suggested. In nine of the 18 treated cases, patients requested reviews with their wives and two reviewed their responses with parents. On one occasion a subject suggested a review with all the members of a combat veterans “rap” group.

The modifications of the stimulus to a standard audible sound rather than use of verbal suggestion was introduced to examine the potential that much of the episodic symptomatology of the severe chronic combat-induced stress disorders might be due to a conditioned emotional response. The second modification, the audio-television taping, was based on the hope of using the recorded data for therapeutic confrontation later in the pre-arranged continued treatment.

In Kardiner’s studies of the chronic post-traumatic war neurosis following World War I, the following were identified: 1) irritability and startle pattern as among the five constant features of the post-traumatic states induced by combat experience; 2) fixation on the trauma (an altered concept of self and the outer world); 3) atypical dreams; 4) proclivity to explosive aggressive reactions; and 5) contraction of the general level of functioning including intellectual function.

Kardiner emphasized “irritability” as present in every case of traumatic neurosis and related this behavioral symptom to exposure to auditory stimuli which induced a startle reflex pattern followed by fright, explosive violence or generalized tremor. Kardiner also noted that sensitivity may exist to other stimuli (light, smell or special stimuli such as snow, rain, etc.). The patients’ significant relationship to arousal or irritability was determined by their association to the circumstances of the initial trauma. The sensitivity of such stimuli was conceived as “the character of a conditioned reflex” — not learned over time but automatically recurring. He proposed that there existed a central physioneurosis related to impairment of those personality functions which assist adaptation of the individual to the real external world, in contrast to the ordinary neurosis where the problem is adaptation to inner world representations of humanity and society. Shortly thereafter, others who worked with the acute cases treated in the course of World War II also referred to the startle response and other phobic responses as due to “conditioning.”

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Kardiner pointed out that psychologically traumatic experiences might precipitate any personality disorder but that no matter the features of that disorder the cardinal symptoms of the traumatic war neurosis co-exist with and are always present in the clinical picture of any other pre- or co-existing syndrome.

THE PATIENTS

Over a three-year period, 94 combat veterans of Vietnam were identified from a large number of patients seen in consultation in the various services of the Veterans Administration Medical Center in Albany, New York. All were examined medically and psychiatrically. Other consultations were requested as indicated.

Each of the veterans completed the Minnesota Multiphasic Personality Inventory and the Center for Policy Research 13 Point Combat Scale. Eleven later received a physiologic assessment in the Stress Laboratory of the State University of New York at Albany.

A group of 18 men were 29 to 34 years of age when treated by narcosynthesis (17 to 21 years of age when they entered the military). Eight of these men were married; nine were divorced (three were living with girlfriends) and one was single. One had some college education, the remainder had completed high school or were in high school at the time of induction into the military. Employment varied in that six held regular jobs, three held occasional jobs and nine were unemployed.

History of mental illness in parents or siblings existed in two instances. One man had two epileptic brothers. One was adopted and another lost his parents at age seven and was reared by a grandmother. A third was placed in a foster home from age six to 14. None of the patients had been identified as psychiatrically ill prior to the period of military service. The developmental histories were devoid of indicators of pre-existing personality disturbance except for two who had difficulties with school authorities or the law prior to entering the military.

Ten patients were wounded in Vietnam but only one had a persistent visible deformity with limitation of motion. Ten reported loss of a close "buddy" during combat. Sixty percent scored in the high range on the combat scale.

METHODOLOGY

Sodium pentothal was administered intravenously by the drip method by a member of the anesthesiology staff in all but the first three cases where sodium amytal was administered intravenously by syringe. The total dosage injected varied from 250 mg to 500 mg of the agent used for each individual. The patient's physiological status was monitored in 16 instances during narcosynthesis by means of continuous recording of electroencephalogram, electrocardiogram and respiratory rate.

Patients were advised beforehand that they would receive an intravenous injection of a barbiturate and that this treatment might reduce their persistent state of tension and anxiety. They were told that when it was apparent they were in a clinical state where there was beginning impairment of consciousness (judged by slurring of speech and impaired ability to count backwards), they would be exposed to a soundtrack consisting of musical and combat sound. They were informed they might re-enact their battle experiences and then fall into a light sleep. Later, after regaining consciousness, they would review the behavioral observations made by the treatment team. They might then wish to comment more fully with regard to their experiences and consequences upon their present living situation. All patients were informed of potential adverse effects from administration of the drug and the measures to be taken if any evidence of physiological or psychological distress developed.

All patients voluntarily signed a consent form for intravenous administration of the drugs and for audio-televising recording of their behavioral response. The consent was reviewed again with each patient to determine if he wished to withdraw the privilege to show the recording to selected audiences. None did so.

RESULTS

Of the 18 Vietnam combat veterans exposed to a 30-second segment of combat sounds while under light (arousable) barbiturate narcosis, 14 immediately responded and abreacted emotionally to a traumatic war experience when stimulated with the 30-second combat soundtrack with time regression. The initial noted behavioral responses may be classified as alerting, fighting, fleeing or crying. There were other affective displays associated with verbal reliving of the traumatic scene. As consciousness clarified, some men erupted into further affective display while explaining their conflicts consequent to the experiences of loss of buddies. The affects evident during the abreaction were fear, rage, indignation, sadness and guilt.

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Dalmane* (Flurazepam HCl/ Roche) (C)

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Effective in all types of insomnia characterized by difficulty in falling asleep, frequent nocturnal awakenings and/or early morning awakening; in patients with recurring insomnia or poor sleeping habits; in acute or chronic medical situations requiring restful sleep. Objective sleep laboratory data have shown effectiveness for at least 28 consecutive nights of administration. Since insomnia is often transient and intermittent, prolonged administration is not generally necessary or recommended. Repeated therapy should only be undertaken with appropriate patient evaluation.

Contraindications: Known hypersensitivity to flurazepam HCl, pregnancy. Benzodiazepines may cause fetal damage when administered during pregnancy. Several studies suggest an increased risk of congenital malformations associated with benzodiazepine use during the first trimester. Warn patients of the potential risks to the fetus should the possibility of becoming pregnant exist while receiving flurazepam. Instruct patient to discontinue drug prior to becoming pregnant. Consider the possibility of pregnancy prior to instituting therapy.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. An additive effect may occur if alcohol is consumed the day following use for nighttime sedation. This potential may exist for several days following discontinuation. Caution against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Potential impairment of performance of such activities may occur the day following ingestion. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, abrupt discontinuation should be avoided with gradual tapering of dosage for those patients on medication for a prolonged period of time. Use caution in administering to addiction-prone individuals or those who might increase dosage.

Precautions: In elderly and debilitated patients, it is recommended that the dosage be limited to 15 mg to reduce risk of oversedation, dizziness, confusion and/or ataxia. Consider potential additive effects with other hypnotics or CNS depressants. Use usual precautions in severely depressed patients, or those with latent depression or suicidal tendencies, or those with impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, light-headedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug accumulation or overdose, have been reported. Also reported: headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pain, body and joint pains and G.C. complaints. There have also been rare occurrences of leukopenia, granulocytopenia, sweating, flushing, difficulty in focusing, blurred vision, burning eyes, larynitis, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, epistaxis, depression, altered speech, confusion, restlessness, hallucinations, and elevated SGOT, SGPT, total and direct bilirubins, and alkaline phosphatases; and paradoxical reactions, e.g., excitement, stimulation and hyperactivity.

Dosage: Individualize for maximum beneficial effect.

Adults: 30 mg usual dosage; 15 mg may suffice in some patients. Elderly or debilitated patients: 15 mg recommended initially until response is determined.

Supplied: Capsules containing 15 mg or 30 mg flurazepam HCl.

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THE CONDITIONED EMOTIONAL RESPONSE

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Of the four who failed to abreact to the combat stimulus, two were previously chronic alcoholics. These men required large doses of pentothal before evidence of cognitive impairment occurred and then quickly became un arousable. The other two indicated that the sound sequences were not meaningful to them. One identified the soundtrack as World War II sounds and the other stated that he was not startled by sounds. No combat veteran responded with abreaction to the initial 30 seconds of non-combat-meaningful sounds (music). Two non-combat veterans exposed to the same stimuli while under narcosynthetic study for reasons other than treatment of a post-traumatic state did not respond to the combat sounds.

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There was no evidence of abnormality in the electroencephalogram other than the presence of fast wave voltage secondary to the barbiturate administration. Cardiac rates remained unchanged. In some there were periods of increased respiratory rates.

Since the possibility existed that changes in various physiological systems may have occurred simultaneously with the observed emotional abstractions, but were obscured by the countereffects of the intravenously injected drugs, further exploration was made in collaboration with Professor E. Blanchard, T.P. Pallmeyer and R.J. Gerardi of the Stress Laboratory, State University of New York, Albany (unpublished data, 1982). Eleven combat veterans with the clinical symptomatology of the post-traumatic stress disorder of war were exposed to the same soundtrack played at different intensities in a fully conscious state, while physiological assessment of heart rate, blood pressure, frontal muscle activity, peripheral skin temperature and skin resistance were monitored on a Grass Model 7D polygraph. Similar exposure and physiological assessment was made of 11 post-doctoral university students of the same age range. Both groups were also stressed with a mental arithmetic problem. The results of the analysis of the physiological data show that both groups responded similarly when presented with the arithmetic stressor. However, when combat sounds were presented the veterans all displayed...
significant increases in heart rate, systolic blood pressure and forehead muscle activity whereas the control subjects exhibited no significant changes. One exception was a veteran then on halol who also stated that the sounds were unrealistic. All veterans were differentiatingly responsive to combat sounds over the musical passages and on a baseline level.

Treatment experience completed for the series of men exposed to narcosisynthesis is another important factor. In the immediate period following narcosisynthesis none of the men recalled their abreactive experience or behavior. During review of the televised abreactive response with the therapist, an impression was gained of immediate increase in self-acceptance and esteem. Several days later many reported affects of sadness or depression. All veterans who were married or living with a girlfriend requested that the tape be shown to their consort, and consequently they reported a greater understanding of and compassion of their erratic behavior by wives or girlfriends. “Working through” was attempted by engaging those abreacted in group therapy supplemented in some cases with individual therapy and pharmacotherapy. There was no recurrence of trance-like dissociative states or panic attacks in any treated subjects. Depressive affect was diminished. On the other hand, startle and sleep disturbances in terms of sleep phobia and repetitive combat nightmares continued.

DISCUSSION

These observations demonstrate the propensity of a group of Vietnam combat veterans with the chronic or delayed forms of the post-traumatic stress disorder of war to: 1) cognitively dissociate in a drug altered state of consciousness on exposure to a combat sound stimulus with time regression and acting out of a single or several psychologically traumatic incidents; and 2) develop immediate physiological hyperactivity in the cardiovascular and neuromuscular systems. The former response was not present in four men who nevertheless had the clinical symptoms of the stress disorder.

We posit the existence in the responding group of men of an abnormal potential for arousal of the emotion of fright with all its physiological concomitants when exposed to appropriate stimulation.

We suggest the existence of an ongoing perceptual motor abnormality with regressive impairment of perceptual discrimination and fixation through emotional conditioning to a primitive startle-arousal pattern. The physiologic overactivity probably is mediated through central adrenergic pathways.

The perceptual impairment is evident clinically. Four veterans were precipitated into dissociative states or acute panic attacks through re-exposure to situations which simulated combat. One veteran did so after joining a National Guard Unit and suddenly awakening in his trench during nighttime maneuvers. Another, who was a state policeman, panicked when placed in special units prepared to carry out violent attacks if required. Perceptual discrimination, furthermore, is impaired further when consciousness is altered through use of alcohol or other mind altering drugs, in light sleep, hypnotic or narcosynthetic states.

Our work confirms the observations of Dodds and Wilson who compared studies of World War II veterans with chronic post-traumatic stress disorder of war. They compared the psychophysiological responsivity of two groups of World War II veterans with the post-traumatic stress disorder combat veteran’s group (13 men adjudged socially compensated and eight men adjudged socially decompensated some ten years after the war experience) with a group of ten non-combatant university students. They monitored the electroencephalogram and pulse and respiratory rates following eight minutes of auditory stimulation of combat sounds, and during the last four minutes of the recording, single light flashes from a photic stimulator were added. A five to seven minute baseline period of recording preceded the stimulation. Increases in pulse and respiratory rate as well as a decrease in alpha rhythm occurred in the vast majority of the combat veterans but not in the control group. Dodds and Wilson concluded that there existed “remarkable similarity of the behavioral and physiological responses of the war neuroses to those produced experimentally in animals through conditioning.” They suggested that sounds and sights simulating those of combat serve as conditioned stimuli to induce the self preservation emotional responses of fright, flight or paralysis which become the conditioned response.

The unconditional stimulus and response are contained in the innate startle response of infancy. Startle response to loud sounds has been recognized as a behavioral manifestation of fear since the earliest studies of the conditioning of infants.

Strauss described in detail an identifiable motor response discovered in infants as well as adults produced
immediately following exposure to loud sounds. Landis' study of the startle pattern clearly describes the simple reflex pattern of startle to sound. He separated those behavioral aspects of the response associated with fear and noted that the startle reflex might be conditioned following the first presentation of unconditioned and conditioned stimuli in some subjects who "did not enjoy the experience." Landis reported differing affective associations to sound startle such as curiosity, fear, annoyance (rage) and "overflow." These secondary conditioned responses were differentiated by Straus as falling into behavior categories of defense, flight and spying.

Children show a preponderance of fear and flight behavior on exposure to sharp loud sounds. With aging

During the aftermath of the catastrophic event the exposed individuals reflect upon and evaluate their personal actions and inactions...

the frequency of development of secondary conditioned responses diminishes. What has been denoted as the startle response in the clinical phenomenology of the post-traumatic states would seem to be the secondary learned conditioned responses to fear over and beyond the innate reflexive pattern of the infant.

Eysenck's recent revision of the learning theory model of the neuroses seems to apply to this group of men with chronic post-traumatic stress disorder. Eysenck postulates that extinction fails to take place when the conditioned response contains emotions such as fear which takes on drive propensities which induce, after an incubation period (delay?) an enhancement of the neurotic process. He accords frustrative non-reward as the nocive stimulus in man and even suggests that the concept of learned helplessness may have relevance as the response to the stimulus.

In the chronic war induced stress disorder cases reported we perceive the operating stimuli for the continuing or delayed symptomatology to be both eruption of emotion on exposure to external fear-inducing stimuli (sound or sight in the current social setting) and arousal of the conditioned emotional response through socially frustrating incidents and transactions.

But the total phenomenology of the post-traumatic stress disorders of war are beyond full explanation within the learning theory model. Freud recognized from his examination of the data that the phenomenology of the war neuroses might not be explained on the basis of his libido theory and that this condition and the social neuroses were related in that they each demonstrated the action of repression and the existence of conflict within the ego. He intimated, however, that more resemblances might exist than those foreseen from the superficial studies of the acute cases studied in World War I. Thus, "the traumatic neuroses and war neuroses may proclaim too loudly the effects of mortal danger and may be silent or speak in muffled terms of the effects of frustration in love."

Horowitz, avoided the affective components in his descriptions of the evolution of the cognitive processes built up by various personality types to defend against their never ceasing repetitive thoughts. He does not bring us to conceptualize the drive forces which lead to the delayed or recurrent explosion of symptoms, which we regard as evidence of both weakness and fragility of the cognitive defensive structures so evident in the veterans reported upon here. These we postulate to rest in our cases in the persistence of the conditioned emotional responses.

Horowitz presents strong evidence that intensity and duration of stress are directly related to the precipitation of the chronic stress disorders over and above the possible predispositions through genetic, constitutional, developmental and physiological status of the potential sufferer.

In every sufferer of acute stress following a catastrophic exposure, a variety of aversive cognitive and behavioral expressions take place in an effort to escape the perceptual heightening of stimuli signaling threat. The memory traces recurrent in the cardinal symptoms of this condition are: the intrusive thoughts, repetitive dreams, irritability, explosive rage and the changed concept of self. Psychologically, suppression, repression and denial predominate as the defensive processes. From the behavioral standpoint, the aversive moves are evident in social withdrawal, the use of alcohol and other drugs, avoidance of all persons, places and dramatic representations which recall the catastrophic event and its attendant affects of fright, helplessness and rage.

During the aftermath of the catastrophic event the exposed individuals reflect upon and evaluate their personal actions and inactions in relation to their survival and the survival of others. It is this latter cognitive processing which induces the secondary emotional responses of shame and guilt wherein the individual judges both his own sense of relief in survival as well as his possible failure in preventing the survival of others. When the aversive defenses fail, as they often do, the irritability, attacks of rage, panic attacks or cognitive dissolution occur with acute dissociative episodes (flashbacks) in
which the sufferer may fantasize or even re-enact the traumatic scene. The sufferer lives in constant dread of
and expectation of recurrence of a catastrophe.

There are probably many individuals who develop acute post-traumatic stress disorders where cognitive
processing protects and allows extinction of excessive emotional responsivity, and of the cardinal symptoms
which subside over time. Our observations delineate the existence within the group of chronic and delayed post-
traumatic stress disorders of a subgroup of individuals who suffer persistent driving through persistent condi-
tioned emotional response.

This data, as well as that of Dobbs and Wilson, support the Kardiner hypothesis of a basic physio-neurosis
existing within some men with the chronic post-traumatic disorder of war and suggest an enduring potential for
pathophysiological arousal of self-preservation emotion in the face of stimuli signaling threat affect.

The delayed form of the condition represents no more than dramatic behavioral expression in individuals whose
already overtaxed defensive structure fails in the face of increased frustration derivative of attempts to function
socially.

From our histories the delayed eruptions have occurred most frequently in the face of anxiety aroused in
transactions within the family or at work which induces recurrent and explosive rage, secondary regeneration of
fear, anxiety, shame and guilt and eruption of the previously suppressed memories of the original major
trauma. In the chronic and delayed forms, these men are both constrained to control their emotional instability as
well as the conflict between yearning for intimacy with others and the fearful, possibly uncontrollable aggress-
sivity toward others. Ultimately there are the agonies of the dread of or loss of still another person who is close.

If the above premises are verified further there are numerous implications for both diagnosis and treatment.
Thus physiological assessment on exposure to combat sounds may be developed as a diagnostic indicator either of
1) the existence of a specific subgroup of the disorder in which there persists an abnormal emotional response, 2)
of a grade of severity of the disorder or 3) as a monitoring device to assess therapeutic intervention.

The varieties of psychotherapeutic approaches to combat veterans of Vietnam, as well as others with post-
traumatic stress disorder provide some alleviation of secondary anxiety, guilt and shame. In the group
described here it is unlikely that these procedures alone will eradicate the basic psychopathology — that is, the
potential for excessive arousal due to the persistent deficit in the emergency control system. The primary therapeutic
focus would seem more appropriately focused on attenuation or suppression of the conditioned emotional
response. This is currently being explored clinically through prescription of adrenergic blocking agents and
through trial of imaginal desensitization.

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