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RESEARCH ON PTSD AND OTHER POST-TRAUMATIC REACTIONS: EUROPEAN LITERATURE

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European PTSD-related literature spans a century and a quarter and is very extensive; any review must necessarily be highly selective. With this caveat in mind, we recommend several texts as an introduction to the European perspective.

One of the better historical sources is E. Fischer-Homberger's *Die Traumatische Neurose*, which traces the development of the concept of traumatic neurosis. (This book will be reviewed separately in the Summer issue.) Historical origins of PTSD research are also apparent in a book by the English surgeon John Eric Erichsen, *On railway and other injuries of the nervous system*, (1867). According to Erichsen, the symptoms of "railway spine" begin imperceptibly after jolting of the spinal cord — a jolt that tends to be especially severe in railway accidents — and leads to a serious pathologic picture of inflammation in the spinal marrow. After days or weeks the patient feels himself undergoing changes; he becomes pale, he wastes away, his concentration powers are reduced, and his memory is deranged; he sleeps badly and has horrible dreams. The pain prevents free movement, and sensitivity to pressure over the vertebral column is nearly always present. Generally, in Erichsen's opinion, the pathological picture resembles a chronic myelomeningitis. Strange as it may seem, says Erichsen, many doctors confuse this picture, which he thought was typical, with a hysteria that mainly occurs in women and not in active men, who are most often struck by the condition he describes.

Gradually there grew an awareness of, and focus upon, the demonstrated *psychic* changes, and "railway spine" became "railway brain" — it was, after all, mainly the brain that was affected. However, after more detailed pathological and anatomical investigations, the myelomeningitic changes described by Erichsen could not be proved, either in the spinal cord or in the brain and its membranes, and an explanation was sought in the so-called submicroscopic molecular changes. These could neither be seen nor proved in any way, but the medical profession was still convinced of their existence.

In 1888, the German neurologist Herman Oppenheim for the first time used the term "traumatic neurosis," a term that later became the title of his book, published the following year. The devel-

opment of the neurosis concept began with Cullen, who used the diagnosis for the first time over 200 years ago, and continued in the work of Charcot, Freud, and Janet. But Charcot's "choc nerveux" is primarily a dominant *somatic* event, which according to his description could bring on the same brain state as hypnosis, and this was in turn a necessary condition for what Charcot called hysterotraumatic autosuggestion. To start with, the purely psychological aspect — that is to say, the emotion, the fright of shock, was evaluated from the physical aspect, just as it was in Oppenheim's work. Gradually the purely somatic explanation of the localization became untenable, and at the same time the etiology was moved closer and closer to the psychological experiences, though not completely.

Of special interest are two works, dating from 1909 and 1911, respectively, by the Swiss researcher Eduard Stierlin, the first and usually overlooked researcher in disaster psychiatry. These works also have had an important influence on Kraepelin's understanding of post-traumatic neuroses. Stierlin's doctoral dissertation describes his observations from a mining disaster. In his opinion, violent emotions and fright are the most important etiological factors. He considers that doctors are not sufficiently aware that emotions can give rise to serious psychoneurotic long-term effects, while laymen as a rule equate psychic causes of illness with simulation. Patients thus not only receive inadequate treatment but also have little chance to get adequate compensation. Stierlin postulates that emotions create a state of lowered resistance within the nervous system which forms the basis for the development of a neurosis.

In his second work, he describes his experiences with victims of a railway accident and finds that unfortunate social conditions and personal disposition can lead to the development of a neurosis. Stierlin also compared victims of these technologi-

We are devoting two issues of the *PTSD Research Quarterly* to an historical survey of PTSD research in Europe. In this issue Drs. Weisæth and Eitinger, of the World Veterans Foundation International Socio-Medical Information Centre (WISMIC), present an introductory essay on the European PTSD literature, followed by a detailed examination of the Norwegian literature on traumatic stress. Our Summer 1991 issue will conclude this survey with a discussion of PTSD publications from Denmark, Finland, France, Germany, Great Britain, and the Netherlands.



cal disasters with victims of natural disasters: of 135 persons who had experienced the earthquake in Messina in 1908, 25% suffered from traumatic sleep disturbances, including nightmares.

R.H. Ahrenfeldt's *Psychiatry in the British Army in the Second World War* (1958) is a rich source book for many psychiatric developments related to combat stress. He also reviews the beginnings of "forward psychiatry" during WWI. In explaining the preferred organic interpretations of "shell shock," he lists the biased trends of then-modern medical science, the resistance to a psychological explanation based on the idea that the British soldier, who was a "hero," could not possibly show "mental" symptoms, which in those days meant moral weakness. The condition of "war neurosis" was thus stated not to be a mental illness, but a physical injury resulting from blasts and other noises in the course of actual fighting — only then could it be morally justified. However, by June 1917, C.S. Myers, a pioneer British Army psychiatrist, observed that at last the term shell shock, in relation to physical injury, was being abolished and that special receiving centers were being set up for mental treatment. From these developed the principles of forward psychiatry. Soon after Myers's report, Dr. T.W. Salmon wrote to the U.S. Surgeon General showing a penetrating insight into the nature and origin of "shell shock," and this enabled the U.S. Army in its mobilization to profit from the British experiences of the previous three years.

Although in WWI only 11% of the men on whom the death sentence for desertion was passed actually suffered the penalty, it appears to have been largely a matter of chance whether a soldier suffering from a psychoneurotic breakdown was considered to be "ill" from "shell shock" rather than a malingerer or deserter. It has been claimed that there may be a connection between the abolition of the death penalty for desertion and the relatively small number of self-inflicted wounds in WWII. Although it is well known that the principles of forward psychiatry were rediscovered in WWII, not everyone is aware that modern treatment principles such as the therapeutic community and group therapy were also developed by psychoanalysts in the British Army. The late Tom Main's *The Ailment and Other Psychoanalytic Essays* (1989) provides important information about this.

Why have we devoted so much space to an historical account? Because we find that the diagnosis of traumatic neurosis, and the understanding of its nature, and treatment, have been so much influenced by its place in history, perhaps more than other psychiatric illnesses. One may ask, What is the message for our time?

The research interest in post-traumatic stress in the psychiatric communities in postwar Europe naturally reflects the type and degree of their involvement in WWII. Occupied countries suffered forms of civilian casualties above and beyond those caused by bombings or the ordinary stresses of war: consequences of "illegal" civilian and military resistance; torture; deportations to extermination

camps; refugees; orphans; political terror and indoctrination, hostage-taking. The "Nacht und Nebel" ("night and fog") principle, which means complete blackout about the fate of the victim, illustrates just one of the terror techniques practiced by the Nazis.

These varied traumatic-stress experiences led to intensive research on different groups, some of which is presented here. The controlled studies of concentration-camp survivors demonstrated the increased mortality and general morbidity, the overwhelming influence of the trauma compared to the modest importance of the pre-existing personality, and the limited therapeutic possibilities several years after the trauma. In some countries, very liberal and humane legislation and compensation came into practice based upon solid scientific evidence. This led naturally in the 1960s and 1970s to a research interest in severe peacetime trauma — type, frequency, duration of psychiatric consequences, role of the trauma in relation to premorbid characteristics of the person, other illness and prognostic risk factors, and finally efficiency of treatment and prevention. The advantages of studying exposure to varying degrees of collective trauma became recognized as a result of this work.

The last two decades have seen in Western Europe a steady increase of research into traumatic stress, similar to that in the United States, with the exception of veteran studies. Only some of this modern research activity is reflected here. We have left out studies that have already been referred to in previous issues of this publication or in the *WISMIC Newsletter*, and have instead concentrated on some less available, but nevertheless important, studies written in languages other than English with which the American audience may not be so familiar.

In Europe as well as in the United States, the 1980 introduction of the DSM-III diagnosis of PTSD helped to move traumatic stress research a further step forward. However, in our experience, the sum of the diagnostic criteria was rather arbitrary, over-emphasizing psychic numbing, but disregarding the importance of aggressive symptomatology. The PTSD label attracted so much attention that the significance of other elements perhaps was neglected. The revised version of PTSD has been an improvement, and the broader range of research items has produced a more balanced development, ensuring that the onesidedness of the past will not repeat itself.

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References will be found on page 7.

PILOTS UPDATE: We are pleased to announce that the first 1950 PILOTS records are now searchable as the PTSD subfile of the Combined Health Information Database, File CHID on the BRS Search Service. A User's Guide is now in preparation. Details will appear in our next issue.

SELECTED ABSTRACTS

POSTWAR REFUGEES IN NORWAY

EITINGER, L. (1958). **Psykiatriske undersøkelser blant Flyktninger i Norge** [Psychiatric investigation among refugees in Norway]. Oslo: Oslo University Press (Norwegian with an English summary).

The aim of this investigation was to examine the prevalence of psychiatric disease among refugees who remained in or came to Norway from after WWII to 1954. An attempt is made to shed light on the question of the higher prevalence, both in general, i.e., mental disease alone, and relatively, i.e., the ratios among the different diagnostic groups controlled. The author reviews the problem of refugees in the postwar period and especially in Norway, where there were about 140,000 displaced persons, forced laborers brought to Norway from Eastern Europe by the Nazi occupation forces. Most of them returned to their homelands; some, however, refused to leave, partly for political, partly for personal, reasons. After the war, Norway accepted refugees from D.P. camps in Germany, the first "transport" being selected according to the working ability of the new immigrants, while successive transports concentrated on refugees who were disabled in one way or another and therefore had been rejected by many screening commissions from other countries.

The present study comprises all postwar refugees who were treated in Norwegian psychiatric hospitals, departments, and outpatient departments. All the patients were personally examined by the author. In addition, all the patient files of refugee organizations, the police, and the immigration office were examined. There were two control groups: An average "transport" and a Norwegian matched group consisting of the same amount of Norwegian patients of the same sex, age group, and diagnosis admitted at the same time. The educational level and the socio-economic status of the refugee patients were lower than that of the Norwegian controls. Two thirds of the refugee patients had not had any contact with their families since the beginning of the war. There were 95 patients: 60 psychotics (50 male and 10 female) and 35 non-psychotics (26 male and 9 female). Only five men belonged to those who were uprooted because of individual political reasons, 69 because of their race or for collective political reasons, and 21 for reasons which were accidental and nonpolitical. It seemed that expectations of the new country, readiness to make sacrifices, and efforts to cooperate in becoming integrated were different in the three groups and largely dependent on the strength of motivation.

The patients were often brought to the psychiatrist by their working comrades or by social workers of the different relief organizations. The environment's threshold of tolerance towards psychotic refugees was much lower than towards Norwegian patients. The frequency of psychoses was about five times higher than could be expected compared with a matched Norwegian population.

Isolation, a lack of stimulation, and misinterpretation lead to paranoid thinking in persons who are predisposed to this type of reaction. Mental isolation, even when physically surrounded, results furthermore in a flood of stimulation, being overwhelmed by new impressions that cannot be absorbed and digested, and a breakdown of the total personality. The difference in religion

(almost all the refugees were either Catholics or Jews; almost all Norwegians are Protestants) seemed to cause a pathoplastic influence mainly upon Jewish refugees. The very serious persecutions they had been subjected to were the main explanation. Almost all of the refugee patients had spent years in different camps. This experience, according to the literature, results in resignation, a lack of feeling of responsibility, aggressivity, and jealousy and hatred toward all those who did not "rot behind wires." Former concentration-camp prisoners had a tendency to irritability, apathy, and lower concentration power.

In considering the diagnosis and the main symptoms, the paranoid syndrome is one of the most outstanding and was found in 52 cases among the 60 refugee psychoses as compared to only 28 cases among the controls. The histories show that the feeling of insecurity is a common feature in all paranoid pictures, the feature that gives the patient doubts about his relation to the outer world and which by projection leads the patient to assume that the world is against him.

Feelings of inferiority towards Norwegian women, as well as organic inferiority (here especially blindness), are important starting points for persecutory paranoid delusions.

Somatization symptoms occurred in nearly half of all cases, and jealousy reactions occurred in 10 psychotic patients as against none in the controls.

CONCENTRATION-CAMP STUDIES IN NORWAY

EITINGER, L. (1964). **Concentration camp survivors in Norway and Israel**. Oslo: Oslo University Press; London: Allen & Unwin.

STRØM, A. (Ed.) (1968). **Norwegian concentration camp survivors**. Oslo: Oslo University Press; New York: Humanities Press.

EITINGER, L. & STRØM, A. (1963). **Mortality and morbidity after excessive stress**. Oslo: Oslo University Press; New York: Humanities Press.

These three monographs represent the main publications by the so-called Medical Board of 1957, a team of medical university teachers who examined concentration-camp survivors neurologically, psychiatrically, by internal medical and sociomedical methods, and by all available laboratory investigations.

The first monograph describes a comparative study of three Norwegian and three Israeli groups of concentration-camp survivors. The first Norwegian group consisted of patients who were admitted to the Department of Psychiatry, University of Oslo, without any connection to their experiences during the war. The second group was a selection of ex-prisoners who at the time of the examination had been more or less incapacitated, while the third group consisted of apparently healthy, able-bodied individuals. The first Israeli group were survivors who on a particular day were hospitalized in Israeli psychiatric hospitals. The second group were psychiatric outpatients, and the third were able-bodied individuals examined in two Israeli kibbutzim. The size of the groups varied between 66 and 152, and the 6 groups comprised almost 600 concentration-camp survivors.

The second Norwegian group, those who were incapacitated, had the most prisoners with captivity of more than two years' duration. They had the most head injuries and had been exposed to special torture. Their loss of weight down to the living-corpse stage was nearly as severe as among the Israeli groups. They had the greatest number of illnesses during their stay in concentration camps; they were exposed to the severest stress, but also had the greatest physical and mental powers of resistance. Jewish prisoners with so many and such serious illnesses had no chance of survival. At the end of the war, only between 10 and 20% of the Israeli groups had more than two members of their families alive. Between 75 and 80% were the only surviving members of their family and relatives. The psychotraumatic importance of these facts is nearly beyond our capacity to evaluate.

As far as coping is concerned, it seemed that those with the severest mental wounds ascribed their survival more to chance than those survivors who functioned on a socially satisfactory level. The latter were inclined to attribute their survival to helpful interpersonal relationships.

The so-called premorbid personality was of lesser importance compared with the psychic and somatic traumatizations suffered. In the Norwegian groups it was to a certain degree possible to distinguish between the various kinds of traumatization and to correlate them with the symptomatology revealed. In the Israeli groups, on whom the traumatic effects were not only much more intense but also much more complex and entangled, the psychological and somatic aspects of the traumatization and its effects were totally inseparable. Chronic anxiety states, nightmares, sleeplessness, disturbing thought associations, chronic depression of a vital type, and inability to enjoy anything, to laugh with others, or to establish new, adequate, interpersonal contacts — in short, the inability to live in a normal way — were among the most characteristic symptoms found.

The second monograph is a detailed account of examinations on 227 ex-concentration-camp prisoners carried out 12 to 18 years after the war. The main reason for the examination was the vocational and social adjustment difficulties of these highly selected ex-prisoners. Two hundred fourteen men and 13 women, at the time of their arrest mainly between 20 and 30 years of age, were admitted to the University Hospital, where they were examined in the most thorough way possible. Each case was evaluated by a board consisting of at least five specialists; their evaluation embraced diagnosis, prognosis, etiology and pathogenesis, and whether any disability could be considered war-related. Whenever it was felt that therapeutic or rehabilitation measures might achieve results, attempts were made to apply them.

Based on information from family, workmates, and all available documents, it was found that health status prior to the arrest was good in 82%, reasonable in 15%, and poor in 3% only. One hundred sixty-eight were considered to have been harmonious and mentally stable; the others were either sensitive persons, unstable, or had other deviating personality traits. More than 90% had been socially well adjusted before the war and in regular employment. Most of the examined had been arrested for illegal activities, and more than half had been systematically tortured, some very brutally indeed. Imprisonment was marked by severe undernourishment and a high incidence of disease. Sixty percent had lost more than 30% of their body weight, and over one third more than 40%. Over 50% had suffered serious diarrhea, edema, and head injuries with loss of consciousness. Other diseases and injuries were also common, as were mental disturbances.

The majority of the examined went back to their work after

a fairly short period of convalescence, but reduced capacity for work soon became obvious; by the time they were referred to the Board only 40% were employed, and out of these, only a few of the working situations could be regarded as satisfactory. There were substantial difficulties in interpersonal relationships both at work and at home.

During captivity two thirds of those investigated had experienced anxiety, despair, serious depressive reactions, and psychic anaesthesia. The psychic disorders appeared with greater frequency among those who were under the age of 25 when arrested, and among the few who had suffered from mental disturbances before the war. The degree of hardship during captivity was also of essential importance.

Psychic deviations were found in 99% of those examined. Affective disturbances with emotional lability, dysphoria, and depression were the most frequent symptoms. There was a marked correlation between the degree of torture, head injuries, and weight loss and the severity of the "concentration-camp syndrome" as described by the authors (at least 5 of the following 11 symptoms: 1. Failing memory and difficulty in concentration 2. Nervousness, irritability, restlessness 3. Fatigue 4. Sleep disturbances 5. Headaches 6. Emotional instability 7. Dysphoric moodiness 8. Vertigo 9. Loss of initiative 10. Vegetative lability 11. Feelings of insufficiency). The presence or absence of these symptoms was quite independent of circumstances in the ex-prisoners' life prior to arrest and to conditions of life after the liberation.

Anxiety, sleep disturbances, and nightmares were remarkably often combined into a steady triad and had a clear relationship with the psychic disorders during captivity. Impotency was strikingly frequent in the age group 45-60 years.

Forty-nine (22%) of those examined had abused alcohol and/or drugs during the postwar years; in 22 of them the excess had been of a transient nature. Abusers were predominant among those who had grown up in less harmonious homes, and whose social adjustment had been less good prior to captivity. But stresses during captivity or aftereffects attributable to it had played a substantial part in many instances. Social withdrawal was frequent.

The traumatizing process during the captivity was of a dual nature: the predominantly somatic traumas with head injuries, hunger, and infections as characteristic exponents, and the predominantly psychic ones, with anxiety and other psychic disorders as main symptoms. Each of these forms of traumatization seemed to carry with it relatively specific sequelae; the first-mentioned have resulted in an "organic psycho-syndrome" with intellectual impairment and other signs of slight dementia as the more conspicuous symptoms, while the latter have resulted in distinct affective, emotional, and mood disorders. The total post-concentration camp symptomatology thus embraces both cerebro-organic and psychic syndromes.

The third monograph is a retrospective investigation of mortality and morbidity up to the end of 1966 among Norwegian concentration-camp survivors. The aim of the investigation was to study the effects of imprisonment on the health of an unselected total prisoner population. Out of the approximately 25,000 to 30,000 political prisoners in Norway during the war, about 8,000 were deported to Germany. Certain categories who underwent a comparatively mild form of internment were excluded from the study, which included 5,706 men and 487 women. Seven hundred and sixty-two of the deported prisoners were Jews.

Of the 5,431 non-Jewish prisoners, 649 (12%) died during imprisonment. The prisoners in the NN ("Nacht und Nebel" — extermination) camps had a mortality of 44.9% as compared to 7.9% in the other camps. Of the 762 Jewish prisoners, 739 died

(97%); most of them were liquidated shortly after arrival. Of the 4,768 prisoners alive at liberation 3,811 were still alive in Norway at the end of 1966. Seven hundred and sixty-three had died during the observation period, from the liberation to the end of 1966. The fate of 4,574 (96%) of those who survived imprisonment was known.

The mortality study was based on comparison between the observed number of deaths and the expected number, based on the mortality of the Norwegian population. Compared with that, the mortality of the ex-prisoners was much higher; it was most marked in the youngest age groups, occurred during all periods of observation, and was most marked during the early postwar period, primarily owing to the great number of deaths from tuberculosis and other infectious diseases. The death rate was much higher among the NN prisoners than among the others. The most important causes of the excess mortality were infectious diseases, "other and unknown causes of death," coronary heart disease, lung cancer, and violent death (accident and homicide).

The morbidity study was carried out on a random sample of 498 people selected from the register of ex-prisoners still alive at the end of 1966. Information on sick leaves, number of days of sick leave, number of hospital admissions, and number of days spent in hospital, of the ex-prisoners during the observation period, and their diagnoses, was gathered from the local health insurance offices serving the ex-prisoners during the observation period. Matched controls were selected from the health insurance files by choosing the card nearest that of each selected ex-prisoner belonging to a person of the same age, sex, and occupation group. Corresponding data on morbidity were collected for the controls as well. There was good correspondence between the investigated ex-prisoner group and the total ex-prisoner population and the control group.

The ex-prisoners had more frequent changes of job, occupation, and domicile with a transition to less qualified and less well-paid work. At the end of the observation period, 17% of the ex-prisoners were receiving pensions because of illness and failing working capacity. The ex-prisoners from the lower socioeconomic classes seemed less able to compensate for their failing health than those from the higher occupational groups, and therefore more of them had to be pensioned.

The ex-prisoners had more sick periods, longer sick leaves, and more frequent and long-lasting hospitalization periods than the controls.

The higher morbidity among the ex-prisoners was not connected with any particular diagnosis; only 51 of the ex-prisoners had no registered diagnoses as opposed to 105 of the controls. Thirty-seven ex-prisoners had more than 10 different diagnoses during the observation period as against only six controls. In all 14 diagnostic groups there were more registered sick persons among the ex-prisoners than among the controls.

None of the findings suggest that the ex-prisoners constituted a group with a greater prewar morbidity or a negative sample, or that this is the reason for the greater frequency of nervous diseases, alcohol abuse, and drug abuse to be found among them. The only explanation for this high frequency was that it was connected with their imprisonment.

The explanation of the ex-prisoners' higher mortality and morbidity probably is that the excessive stress they experienced during imprisonment lowered their resistance and lessened their ability to adjust to environmental changes. Even small additional stress situations could upset their labile equilibrium and result in a manifest illness. Such additional stress situations can arise at any time during a person's life, and this explains why there was

no accumulation of diseases in a particular period.

MAJOR, E.F. (1990). **The effects of the Holocaust on the second generation: A study including control groups of Norwegian-born Jewish Holocaust survivors and their children.** In J.E. Lundeberg, U. Otto, & B. Rybeck (Eds.), *Wartime Medical Services* (pp. 112-119). Stockholm: FOA.

The whole population of the second generation of Norwegian-born Jewish Holocaust survivors (19 persons) was compared to 37 children of Norwegian-born Jews who spent the war years in Sweden; among others, PTSD-related symptoms were looked for. Although none of the second-generation Holocaust survivors could be diagnosed as suffering from PTSD, this group scored higher than the comparison group on most symptoms. Unexpectedly, the children of Holocaust survivors also showed some conflicts relating to Jewish identity. Compared to the control group, they felt it less important to stick to the Jewish traditions, viewed themselves less as Norwegian Jews, and had less connection to the Jewish community.

THE WAR SAILOR SYNDROME

ASKEVOLD, F. (1976/77). **War sailor syndrome.** *Psychotherapy and Psychosomatics*, 27, 133-138.

ASKEVOLD, F., LÖCHEN, E.A. & SJAASTAD, O. (1976). **Krigsseilersyndromet** [War sailor syndrome]. *Tidsskrift for de Norske Læge Forening*, 96, 868-872.

ASKEVOLD, F. (1980). **The war sailor syndrome.** *Danish Medical Bulletin*, 27, 220-223.

One third of the Norwegian sailors who survived their service in the Merchant Marine during WWII were disabled by the war experience. Many of them decompensated as late as the 1970s. The symptoms of the war-sailor syndrome are very similar to those of the concentration-camp syndrome. The stress the sailors were exposed to during the five war years was characterized by a constant threat to their lives, and frequent or even continuous interruption of sleep. The foremost dangers were represented by German/Japanese submarines and attacking airplanes. The freight was highly explosive: gasoline, explosives, ammunition. During 1942-43, on average, one Norwegian ship was torpedoed every third day. In contrast to the concentration-camp prisoners, the sailors experienced only psychological stress. That stress, however, was constant and consisted of a long-lasting confrontation with dangers they had no possibilities to fight back or escape from — a particularly vicious kind of restraint stress.

In addition to the physical threat, the sailors were separated from their families for several years, and many of them lost brother, fathers, or close friends on ships in the same convoy without having any chance to make rescue efforts. Anxiety in the war-sailor syndrome, with its concomitant autonomic imbalance, is a reflection of the five years with a real fear of death. The anxiety is true anxiety, as Freud would have termed it, and not neurotic. It does not defend against any conflict, and in comparison with the resident population, the war sailors had not evidenced any greater amount of previous instability, nor did their childhood circumstances suggest any greater signs of predisposition to neurosis.

The recognition of the specific chronic post-traumatic syndromes described above produced important improvements in the laws governing disability and compensation claims. There is

no doubt that the full understanding of the true nature of these disorders and the increased practical and social support given have made life somewhat less painful for these chronic sufferers of war traumatization.

STRESS REACTIONS TO INDUSTRIAL DISASTERS

WEISÆTH, L. (1984). **Stress reactions to an industrial disaster.** Medical Faculty, University of Oslo.

WEISÆTH, L. (1985). **Post-traumatic stress disorder after an industrial disaster.** In P. Pichot, P. Berner, R. Wolf, & K. Thau (Eds.), *Psychiatry — the state of the art* (Vol. 6, pp. 299-307). New York: Plenum Press.

WEISÆTH, L. (1989). **A study of behavioural responses to an industrial disaster.** *Acta Psychiatrica Scandinavica*, 80 (Suppl. 355), 13-24.

WEISÆTH, L. (1989). **The stressors and the post-traumatic stress syndrome after an industrial disaster.** *Acta Psychiatrica Scandinavica*, 80 (Suppl. 355), 25-37.

From 1976 to 1980 a combined interventive and research project was carried out on 246 employees in a paint factory on the south coast of Norway, 125 of whom had personally survived a devastating explosion and factory fire. The study started the day after the incident, which was caused by leaking gas fluids from paint production. Six employees were killed and 23 injured, 2 severely. The buildings were severely damaged, with the result that nearly all the factory jobs vanished overnight. The disaster was unprecedented and unanticipated; the impact was sudden, without forewarning, violent, uncontrollable, and brief. There were few secondary disaster stressors, since the company management ensured further employment elsewhere until the factory could be built up again. Based on their distance from the explosion center, the subjects could be divided into three exposure categories: High (n=66), moderate (n=59), and low (n=121) stress exposure groups. They were all personally examined shortly after the explosion, again after 7 months and 4 years post-disaster by questionnaire / interviews. Seven variables were used in measuring the behavioral responses during the disaster impact, which when added up gave three categories of disaster behavior: optimal (29%), adaptive (49%), and maladaptive (22%). A variable measuring disaster training/experience alone predicted the disaster behavior category correctly in 84% of the subjects.

The frequency and intensity of post-traumatic stress reactions were linked to the severity of the stress exposure; specific post-traumatic anxiety reactions were reported by more than 80% of high-stress subjects. Their reactions appeared immediately or within hours; only 5% had delays of a few weeks. While 24.3% of the highly stressed subjects had State Anxiety Inventory scores one week post-disaster higher than 60, 8.5% of the moderate- and 2.5% of the low-stress groups had similar scores. Depressive reactions, social withdrawal, guilt, shame, and irritability were less frequent, and appeared nearly always concomitant with anxiety symptoms. While the anxiety symptoms made up a tight-knit syndrome, the less frequent non-anxiety symptoms were linked to the post-traumatic anxiety syndrome. The subjects' fears reflected the trauma, they feared inanimate objects, and there were hardly any paranoid ideations.

The disaster exposures of the high- and moderate-stress groups but not of the low-stress group members constituted a stressor that fulfilled the PTSD stressor criterion of the DSM-III-

R. A minority of the low-stress group developed a post-traumatic stress syndrome. After seven months, all 30 post-traumatic stress reactions were more frequent and severe in the high-stress group than in the moderate group, which in turn differed from the low group. Irritability was the only post-traumatic stress reaction that increased in frequency and intensity during the seven-month observation period. Symptoms of psychic numbing were rare. The seven-month point prevalence of PTSD was 37% among high-stress, 17% among moderate-stress, and 4% among low-stress subjects. Only the different levels of stress exposure could explain the differences in PTSD prevalence. While a broad and non-specific type of psychological vulnerability to the disaster stress was found, proneness to anxiety reactions was a particularly disposing factor. A high level of training was a protective factor. In a discriminant analysis, female sex, high stress exposure, and psychiatric functional impairment in the past predicted PTSD in 88%. Various early reaction variables had high sensitivity and specificity in predicting PTSD. Four years post-disaster, 19% of high-stress, 2% of moderate-stress, and 3% of low-stress subjects suffered from PTSD. Nine of the ten poor-outcome cases belonged to the high-stress-exposure group, and only one of the ten had a completely unremarkable pre-accident personality structure.

HOLEN, A. (1990). **A long-term outcome study of survivors from a disaster.** University of Oslo.

The population of survivors from the Alexander L. Kielland disaster, in which 123 died and 89 survived, with domicile in Norway (n=75), was compared with a matched population of oil workers unexposed to disaster (n=92). The occurrence and persistence of sick leaves were found to be significantly higher among survivors with regard to diagnoses categorized as "Psychiatric," "Psychosomatic," and "Casualties," while for "General Somatic" diseases no difference emerged.

Ratings of symptom levels five years after the disaster were analyzed, and two types of concurrent outcome appeared. The first and most pervasive outcome was characterized by distress, yet hardly related to occupational dysfunction. The second outcome had occupational dysfunction as a major quality.

By means of various predictors, efforts were made to explain the two concurrent types of outcome, as well as a prospective outcome measure based on sick leaves. It was found that the impact of disaster was significant in relation to all three types of outcome. It was also demonstrated that patterns of alcohol consumption were a significant determinant to all three types of outcome.

Additionally, the concurrent outcome dominated by distress was primarily explained by the "General Neurotic" character traits of a person. Outcome associated to concurrent occupational dysfunction, on the other hand, was related to reported job stress, social support, and background factors such as deficits in childhood and a history of previous psychiatric problems in the subject.

The prospective outcome was determined by social support and personality, in addition to the impact of the disaster and of alcohol.

There were indications of cognitive impairment resulting from the disaster experience, particularly in processing threat-related stimuli; this was found in models related to occupational dysfunction.

The post-traumatic nightmares were explored. Based on analyses of content and repetitiousness, revisions of the common interpretations of their content were suggested. The frequency of

post-traumatic nightmares was found to be a powerful predictor of occupational dysfunction.

CIVILIAN ACCIDENTS AND POST-TRAUMATIC STRESS DISORDER: THE NORWEGIAN STUDIES

MALT, U. (1987). **Psychopathology and accidental injuries.** *Acta Psychiatrica Scandinavica*, 76, 261-271.

MALT, U. (1988). **The long-term psychiatric consequences of accidental injuries: A longitudinal study of 107 adults.** *British Journal of Psychiatry*, 153, 810-818.

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MALT, U., KARLEHAGEN, S., HOFF, H., TIBELL, E., HERRSTRÖMER, U., HILDINGSSON, K., ET AL. (to be submitted for publication). **The effect of major railway accidents on the psychological health of train drivers. I: Acute psychological responses to the accident. II: A longitudinal study of the one-year outcome after the accident.**

In order to get a better overview of the post-traumatic psychiatric consequences of civilian accidents, we have conducted a series of retrospective and prospective longitudinal studies of civilian populations involved in accidents with and without physical injury. Due to the very accurate health registers in Norway covering all Norwegians, and the allocation of all injuries in one geographic area to one particular hospital, representative samples of the general accident population have been obtained.

The negative biological, psychological, and social outcomes following accidental injuries admitted to hospital were assessed after three years in 551 adults by questionnaires, medical records, and information from the National Insurance Offices. Fifty-four percent reported at least one negative outcome. In about half of these cases, reduced quality of life, without any significant psychiatric disorder, was the main problem. Of the 551 persons, 18.9% claimed worsened psychological health. Symptoms of depression appeared to be most prevalent. Prediction of the outcome by means of logistic and linear regression models showed that the psychological outcome could not be explained by the severity of the physical injury alone. Variables describing premorbid dysfunction and variables describing the emotional impact of the trauma were important. The same trend was found in a personal follow-up study of 70 burned adults.

In order to validate the findings, a carefully designed comprehensive, clinical longitudinal study of 107 injured adults was conducted. This study showed that the incidence of non-organic psychiatric disorders caused by the accident was 16.8% six to nine months after the injury and 9.3% at the final follow-up after two years. Depressive disorders of different severity were most often seen. At the final follow-up, 29% of the subjects reported a definite fear associated with exposure to situations that symbolized or resembled the traumatic event. But only one of the 107 subjects fulfilled the DSM-III criteria for PTSD during the first month, and none at the final follow-up. If we did not consider the DSM-III criterion of numbing of responsiveness to, or reduced involvement with, the external world, the incidence of PTSD cases during the follow-up period was 4%.

This clinical longitudinal study, which started hours after the injury, also allowed better statistical control for the effect of

premorbid variables. When these were considered, the variables describing the emotional impact of the trauma no longer had any substantial predictive value. The psychiatric problems were best explained with emphasis on premorbid and acute response variables.

The low prevalence and incidence of PTSD and the weak role of emotional accident variables in predicting outcome was further investigated in a prospective study of 100 train drivers involved in on-the-track accidents causing major injury or loss to persons. Most of the train drivers suffered no physical injury, but the visual, and less often auditory, impact of the accident could be severe. In most situations, the drivers had no possibility of stopping the train, having to passively watch the train hitting the person on the track. The self-reported mean symptom scores of intrusion among the drivers were somewhat higher than in the random sample of civilian accidents, but only 14% showed a high level of distress acutely. Some distress was found among 8% at the follow-up, but no driver suffered from a PTSD. The distress was related to premorbid variables and previous exposure to similar accidents.

Our studies demonstrate that PTSD is very infrequent after civilian accidents with or without injury. Symptoms of depression are more frequent. Premorbid variables have crucial influence on the perception and the meaning of the accident and the

Abstracts of articles from other European countries will appear in our next issue.

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PTSD RESEARCH ACTIVITIES AT THE MANCHESTER VA MEDICAL CENTER

Roger K. Pitman, MD

In 1983, I began collaborating with Scott Orr, PhD, a psychophysiological, on an NIMH-funded study of conditioning in generalized anxiety disorder. We soon became interested in PTSD and designed a research program based on a paradigm provided by Dr. Peter Lang. In his method, "scripts" of a subject's past experiences are recorded for playback in the laboratory. The subject is instructed to imagine the experiences, while heart rate, skin conductance, and facial electromyograms are measured.

Using Lang's method, we found that Vietnam veterans with PTSD produced markedly higher physiologic responses to combat imagery than healthy combat controls. When controls attempted to simulate the physiologic responses of PTSD subjects, only 25% were able successfully to do so. The increase in physiologic responses to combat imagery was replicated in a new group of PTSD Vietnam veterans vs. combat veterans with non-PTSD anxiety disorders. We then used psychophysiological responses to validate various PTSD psychometric measures. Recently, we found significantly higher responses to combat imagery in World War II and Korean conflict veterans with PTSD, in comparison to healthy combat veterans of the same wars. A psychophysiological discriminant function derived from the Vietnam veterans correctly classified 95% of the older veterans as PTSD or non-PTSD. The physiologic responses of these older veterans were actually higher than the responses of the Vietnam PTSD veterans, even though their combat events occurred forty years ago — compelling testimony to the durability of PTSD.

A VA Cooperative Study is currently using the script-driven imagery method to evaluate the practical application of physiologic responses to PTSD diagnosis. As consulting psychophysiological, Scott Orr has overseen the establishment of 15 VAMC laboratories modeled after our own. We have also established laboratories at Hadassah University Hospital, Jerusalem, and the Massachusetts Mental Health Center.

In a more exotic study of conditioned responding, we found naloxone-reversible analgesia in PTSD subjects in response to the movie *Platoon*. This added a biological dimension to our understanding of psychological and physiologic reexperiencing in PTSD. In other research, we have reported increased urinary cortisol excretion in PTSD vs. combat control veterans, estimated the prevalence of PTSD in wounded Vietnam veterans, analyzed the pre-Vietnam contents of the military health and personnel records of Vietnam veterans who went on to develop PTSD, and described psychiatric complications of flooding therapy for PTSD. Tamara Gurvits, MD, has recently found significantly increased soft neurologic signs in PTSD patients. An intriguing finding from our Israeli laboratory has been persistent autonomic response to auditory stimuli in PTSD subjects, providing experimental support for Kolb's hypothesis of impaired habituation.

Our research efforts have been advanced by the participation of Drs. Bruce Altman, Natasha Lasko, Ron Longpre, and Roger Poiré, staff psychologists; Mike Macklin, research subject counselor; Heike Croteau, lab technician; Ann Repak, administrative officer; Linda Lavoie, secretary; and Pauline Simard, volunteer. We have received \$1,900,000 in peer-reviewed grants from the VA and NIMH. In 1988, our laboratory became a component of Harvard Medical School. In 1989, we moved to 3,000 sq. ft. of newly renovated space off-station. Future areas of interest include extending the script-driven imagery method to non-combat PTSD, investigating the autonomic component of the acoustic startle response in veterans, testing the eye movement desensitization/reprogramming treatment procedure for PTSD, and evaluating hormonal modulation of traumatic memories.

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