

EXHAUSTION - STRESS – RESILIENCE

H.-W. Gessmann

ICCPP – International Center of Clinical Psychology and Psychotherapy, Aichach, Germany

All individuals with no exception are subject to exhaustions as we go along with our respective daily lives. However, exhaustion—or burnout rather—always breeds stress; and when it reaches to extremities due to certain factors, the individual will most likely fall victim to a state of burnout. Burnout, defined as an occupational phenomenon, is a state characterized by exhaustion, negativism towards own professionalism, and reduced work effectiveness resulting from unmanaged chronic stress. [16]

Causes and origins of burnout from varying sources range from bullying and personality disorders to a spoiled childhood, and/or an early social development into a feminized man which may likely cause a decreased stress endurance in later life. In some cases, a state of burnout may be viewed from a social perspective as a form of achievement within globalized capitalism (Egle & Klinger, 2012). In terms of social science, such phenomena is illustrated as of an adaptation of complex interplay of factors between individual and organizational routines, which may be viewed as reflexive or intentional. (Maslach et al., 2001)

For example, Sennett (1998) explains in his book "The Corrosion of Character" that "according to the slogans of the new order, dependence is a sin." The flexible person must act independently, for such autonomy is a prerequisite in order for current economic processes to function. Oskar Negt interprets this flexible person as "the uprooted person" (as cited in Egle & Klinger, 2012). As such, a lack of relationship is a basic principle of modern society, resulting to a lack of support in the private sector.

ORGANIZATIONAL AND INDIVIDUAL FACTORS INFLUENCING BURNOUT

Körner (2003) defined the labor and organizational factors that influence burnout as—amongst others—excessive responsibility, restricted activity and options, lack of social support either in work or personal life or both, and conflicts in roles (as cited in Egle & Klinger, 2012). The state of clienteles may also play a role in causing burnout, especially if they are unmotivated, aggressive, and/or problematic in certain areas. The structure of the work in terms of anonymity and transparency, as well as the size of the organization further affect the interplay of such factors. These include work results not acknowledged nor recognized from both the clients and the organization. All the psychological

stress and strain caused by the aforementioned factors are major triggers of burnout most especially in social professions.

On the other hand, the individual factors defined are subdivided into two: job-related attitude and personality traits. (Körner, 2003, as cited in Egle & Klinger, 2012). The former includes idealism, enthusiasm, a high sense of responsibility, and a compromising attitude where such unhealthy ideals lead to people no longer working so they may live, but rather living so they should work. There are also individuals with pronounced perfectionism which result to pressure generated to itself; but the individual in question may not recognize this and therefore the pressure is instead projected to their surrounding environment. Personal borders also cease to be perceived when there is high sense of social commitment and over-identification with the clients. Meanwhile, the personality traits include heightened fear, self-worth issues, and utter lack of self-confidence. Such traits are compensated for by actionism, a workaholic behavior, and a certain degree of aggressiveness, so as to imply importance on one's self when working on multiple tasks. Such coping strategies are mostly passive, and indirect in nature and therefore any positive and/or negative events are not perceived as the result of one's actions, but are defensively believed to be caused by environmental conditions. These individual traits further increase the vulnerability of an individual to a likely risk of burnout.

As implied earlier, occurrences of burnout are mostly observed in work places, especially of those with progressive and comprehensive rationalization in the company and professional specialization. Professions lacking of social recognition, or worse, looked down upon by the society may have adverse effects to the individual in terms of stress tolerance. Moreover, professions with increasing demands and stressful changes in values are further identified as triggers to burnout thus leads to a downfall of structure of in everyday life. (Egle & Klinger, 2012)

STRESS PROCESSING SYSTEM

Recent neurobiological studies explain a connection between the stress processing system in the brain and the vegetative nervous system, as well as the hormone axis between the brain and the adrenal gland, or the adrenal cortex and the adrenal medulla. This pituitary adrenal cortex (HPA axis) is activated when stress is processed and then releases cortisol in the adrenal cortex after a triggered sequential reactions. Then, glucocorticoid receptors regulate the cortisol release in the adrenal cortex by providing feedback when there is sufficient concentration. The more of these receptors there are, the lower the cortisol level in the blood—thus indicating a higher stress tolerance.

As stress occurs, the brain activates particularly in the hypothalamus and releases the stress hormones most especially corticotrophin-releasing hormones (CRH) and the messenger arginine-

vasopressin (AVP). These two stress hormones activate the two axes between the sympathetic and parasympathetic nerves, the locus-caeruleus-norepinephrine axis (LC - NE axis), and the HPA axis, which then releases adrenaline and noradrenaline in the adrenal medulla and cortisol in the adrenal cortex.

At eustress, the messenger brain-derived neurotrophic factor is released which is required to expose nerve tracts in the brain to synapses. Eustress is therefore a prerequisite for learning, as it presupposes—for synapse connection (synaptogenesis). More exposure to a certain situation increases the effectiveness of the nerve connection; the situation is therefore more efficiently carried out, which also reduces the stress response and hormone release.

The stress processing system may also evolve to adapt in changing environmental influences, whenever the inner balance is threatened. This balance (allostasis) is restored through neuronal, hormonal and behavioral programs anchored in the genes. Messenger substances are released, activating the connection between brain and body. Equilibrium (homeostasis) is attained again once the stress-causing situation is handled and managed.

Moreover, CRH and AVP are released in a much larger amount when persistent stress is continuously experienced, leading to an excessive release of cortisol and significantly increased its concentration level. A certain extent of increased cortisol level may cause negative effects on different areas of the brain, thus restricting synaptogenesis and learning ability. However there is a distinct difference of affected areas on the brain, depending on the kind of stress whether it is physical or psychological. Physical stress will mainly damage the hippocampus and amygdala, but psychological stress includes especially the prefrontal cortex as one of the affected areas. The said areas are further affected by nerve degradation, restricting the cognitive assessment in managing stress. The amygdala, however, grows instead, making it more active and creates somatization

Adaptation usually takes place in that same situation in stress processing as long as it is eustress. However, with changing stress situations that prevent possible adaptation, there is an extended, persistent stress reaction that does not subside.

Such somatization could also lead to certain types of depression. The stress processing system eventually fails to work—not even with eustress—helplessly exposing the individual to stress factors. This will inevitably lead to prolonged burnout and cause high risks of cases of chronic fatigue syndrome (CFS) or fibromyalgia syndrome.

EPIGENETICS

In the subject area of epigenetics, the interaction between the existing genetic makeup and the environmental factors is described. For example, this explains to how and why humans and earthworms differ so much in so many aspects (i.e. appearance, behavior, etc.), but still share 90% of same genome with each other. The answer: it is not only due to genome itself, but also the environment and its interactions with the environment that take place.

To elaborate further, test subjects of chimpanzees in a stress study (USA) were examined for their serotonin transporter gene. Two different combinations of inheritance from father and mother are possible: (1) short part and long part and (2) two long parts. In the experiment, the chimpanzees with the different genetic makeup were put under stress and the ACTH from the HPA axis was examined as a stress marker; this results to hardly any difference at all before and after the event of stress. This concludes to not only the genetic makeup being the decisive factor, but the early life experiences of either care or neglect. A large difference in the ACTH release before and after the stress could be found in the neglected chimpanzees with the genetic combination "short-long"; early interaction with the organism's environment caused the increased sensitivity to stress, as measured with the ACTH release.

A different study by a research group from Canada led by Michael Meaney (2001) has carried out experiments on the influence of childhood attachment experience in rats on certain stress-relevant parameters. An intensive bond between the rat mother and her baby affects, among others, a specific area in the brain metabolism. The expression of Neurotrophic Factor 1A is of great importance in the learning process when connecting exposed synapses. As such, it is concluded that cuddling and grooming is an important basis for learning abilities in later life, making the learning processes less stressful for the individual. Second, childhood attachment experiences affect a particular gene segment that is responsible for two tasks: (1) the expression of glucocorticoid receptors (docking sites in the brain keep cortisone levels in the blood low and help deal with stress and (2) the expression of oxytocin (binding hormone). This gene segment is surrounded by a form of shell, which is broken down by the physical proximity between mother and child, whereby the gene segment comes into effect. Once more through epigenetics—the crucial point is that, the envelope of the gene segment is degraded by the positive environmental influences. The experience of close bond with the mother in childhood leads to the same behavior towards the children in the adult rat, transferring the positive phenomenal effect of physical closeness is to the next generation. The physical proximity that a rat mother gives to her baby makes her rat more lifelong stress-resistant and she is able to pass on this potential to her children without the genes having changed due to the early positive environmental influences.

Overall, close ties (in the form of cuddling and grooming) creates positive influences for stress sensitivity for later life. The inheritance does not run through the genes, but through the interaction of

environmental influences and the genes. The early attachment leads to increased stress resistance in adulthood through epigenetic changes and a transgenerational transmission due to the combination of attachment and stress resistance.

STRESS AND TYPE 2 DIABETES

Type 2 diabetes mellitus has long been considered an established disease without a psychosomatic cause due to it being a metabolic disease. However in as early as the 17th century, English doctor Thomas Willis (1675) noticed that most people experiencing severe stress, sadness and suffering later developed diabetes. Menninger (1935) conducted a study based on this and hypothesized the existence of psychogenic diabetes and spoke of "diabetic personality", noticing that during clinical examinations, there were certain personality traits that occurred frequently in diabetes patients. However, it could not be clarified whether the personality was the cause or the consequence of the diabetes.

Later on, various studies from 2006 to 2008 found a connection between anxiety and depression and the risk (+ 37 to 50%) of developing diabetes. However, these correlation studies do not provide any background information. Further studies show an increased risk of diabetes due to stressful life events, emotional stress, anger, hostility and sleep disorders.

In stressful situations, the allostasis system continues to help the body function well. If this system gets into an imbalance, it also affects the central processing in the brain. When processing a large amount of stress, the amygdala is activated, which causes glutamate to be released into the paraventricular nucleus (midbrain), from where there is a direct connection between the autonomic nervous system (sympathetic, parasympathetic and HPA axes) into the beta cells of the islets of Langerhans. This means that there is a direct activation of insulin secretion. This is necessary so that the brain gets as much glucose as possible in order to be able to process the stress. The coordination between glutamate 1 and glutamate 4 receptors determines whether the energy goes to the muscles and fat or to the brain (glucose metabolism). This process is called "brain pool". The brain is a kind of attractor because it tries to get as much glucose as possible.

If the stress to be processed is so strong that the glucose is insufficient - in the case of chronic psychosocial stressors - a cerebral programming error occurs. In childhood, this can be characterized by emotional neglect or by prenatal or perinatal complications and by food-related signals. In addition to the imprints from early childhood, there are false signals (e.g. from psychotropic plants and opiates). The latter intervene in the "diabetes metabolism" due to their counterproductive effect (after four months of use, the pain receptors are reprogrammed to increase sensitivity to pain). Structural disorders

(e.g. a brain tumor) are rarely the cause of a disorder of the brain metabolism due to the aforementioned cerebral programming by early stress, resulting to increased food intake as the brain sends the message to the body that it needs more glucose to handle the constant stress. This can unbalance the need for food and the food intake. This can lead to obesity and the body pool as a second mechanism.

The body pool meant that the glucose, e.g. B. stored in the liver is not sufficient, which is why more glucose is required through food intake. This leads to obesity, which increases the risk of developing type 2 diabetes. However, the body pool mechanism already increases the risk of developing diabetes. That is why the term “selfish brain” was created.

This scientifically clarifies the connection between the early childhood stress factors and the low life expectancy due to various diseases: diabetes, chronic obstructive pulmonary diseases.

CHRONIC FATIGUE SYNDROME (CFS) AND FIBROMYALGIA (FA)

The ICD-10 diagnosis for the chronic fatigue syndrome lies within the neurological disorders section; G9.3 chronic fatigue syndrome in immune dysfunction is synonymous with benign myalgic encephalomyelitis and post-viral fatigue syndrome. Such diagnosis is confirmed only with excluded symptoms such as the following: depression, anxiety disorder, malignant disease, and sleep apnea, underactive or overactive thyroid, thyroiditis pernicious anemia; vitamin B12 deficiency, chronic hepatitis, diabetes mellitus, anemia, hemochromatosis, HIV/AIDS, hypercalcemia, Addison's disease, Celiac disease, multiple sclerosis, myasthenia gravis, Parkinson's disease, polymyalgia, myopathies, sarcoidosis, lupus erythematosus and Lyme disease.

The CDC criteria for CFS were established in 1994 to distinguish it from several other exhaustion disorders, with the main criteria (i.e. unexplained yet clinically proven chronic fatigue, determinable starting time, no improvements through rest, no consequences of overload, burdens all aspects of everyday life, and persists longer than six months) and the secondary criteria (i.e. short-term memory, restricted concentration, sore throat, headaches, armpit lymph nodes, muscle/joint pain, etc.)

The actual cause of CFS has not exactly been clarified yet but there are biological stressors and psychosocial disorders that can become triggers. It is still a question of etiology and pathogenesis. Various viruses may trigger CFS specifically as biological stressors, but not exactly as its casual factors. For some researchers, the question of immunological causes is still in the foreground.

In 2009, a study was published by the Whittemore Peterson Institute that showed a connection between CFS and the retrovirus XMRV (Mikovits et al., 2009). As a result, the immunologists felt confirmed and the discussion about the cause of CFS reignited. Four different working groups tried to

replicate this, but none succeeded. All samples were contaminated with a retrovirus, which had nothing to do with the clinical picture and as such, the work was withdrawn in 2011. (Boseley, 2010)

A study on personality disorder related to CFS showed a 4-fold proportion of people with personality disorder than the normal population. The most significant are: schizoid, borderline, avoidance, compulsive and depression. These personality disorders lead to unstable relationships and an unhealthy lifestyle. People with personality disorders often show a low willingness to cooperate in treatments and therapies are often discontinued. (Nater et al., 2010)

Another study revealed that childhood stress factors are 5-6 times more common in the history of CFS patients than in the control group. These results could not be published in the 1990s because the reviewers attributed the results to an overestimation of the impact of childhood stress factors. (Heim et al., 2009)

Consequently, there seems to be a large overlap between CFS and FA. The diagnosis for FA took place via the 18 tender points (tendon attachment points) If a general pressure on 11 out of 18 points causes a reaction in the patient and these 11 points are distributed over the four quadrants (the navel corresponds to the origin) of the body, the diagnosis is considered positive. Attempts have been made to subsume the FA among other rheumatological diseases. FA is the only disease that has patent protection. This is legally relevant for those affected to ensure that they suffer from a recognized illness and do not simulate it. However, there is no evidence of a relevant muscular disorder as the cause. Rather, this is the result of the disease, but not the cause. The muscles change through permanent protection. Since 2003, the 18 tender points have no longer been used as a scientific diagnostic method for FA because it was not valid and reliable. Rheumatological treatment (psychological counseling, relaxation procedures for coping with pain) helps superficially but does not address the causes (Wolfe et al., 1990).

The pain sensitivity of those affected is increased on every area of the body—which is why the 18 tender points have been abandoned—indicating central sensitization processes. This can also affect other sensory perceptions (e.g. noise sensitivity). Increased fatigue, fatigue, sleeping disorders, cognitive impairment are common in this patient group and the whole is pathogenically heterogeneous, i.e. it is a syndrome and not a clinical picture. This shows the large overlap with the CFS. Depending on what the patient puts in the foreground—pain or exhaustion—the diagnosis fails. That is why there is a new diagnostic procedure. Wolfe—who is also responsible for the 18 tender points—has divided the body into 19 areas. The severity depends on the four additional criteria in addition to the number of areas affected by the pain: fatigue; sleeping disorder; cognitive impairment; dizziness, irritable colon, and/or depression. Depending on the severity, the individual additional criteria give points between 0

and 3, which can add up to 12. This descriptive diagnosis no longer focuses only on pain and recognizes the symptoms of the somatization disorder as a psychosomatician. (Wolfe & Häuser, 2011)

The pathogenesis model of FA starts with early stress experiences and occasionally a genetic predisposition, leading to increased stress vulnerability. Afterwards, those affected are exposed to biological stressors and often psychosocial stressors; chronification is favored by the self-help groups (patient-related factors) and rheumatological treatment (iatrogenic factors). In psychosomatic treatment, the patient is often worked on both the pathogenically relevant parameters and the chronification parameters. FA is treatable and after a short time the pain disappears through adequate psychosomatic treatment. A differentiation is needed in what is behind it. The mental disorder with the main symptom of pain is often a somatoform pain disorder or somatization disorder, but also a post-traumatic stress situation—which is often overlooked. The functional pain syndrome must be differentiated from this, which is often due to anxiety disorders or an anankastic personality disorder. With a correct differentiation, the causes can be treated specifically, which leads to efficient improvement and healing.

PREVENTION AND THERAPY

There are three main levels of prevention: primary, secondary and tertiary; primary level of prevention mainly focuses on preventing unfavorable environmental influences leading to far-reaching negative influences in childhood.

One major approach to prevent these early influences is parent-training programs such as Faustlos and PALME. Faustlos is a program “that has been developed for the prevention of aggression and potentially violent behavior in children...” (Krannish et al., 1997); teachers will role play conflict situations with the children and solve for a non-violent solution. Meanwhile the PALME is preventive training for single mothers—and may also include fathers—based on attachment theory and psychodynamic-interactional approaches. (Franz et al., 2011)

Another approach is to teach mindfulness. The raisin method is a mindfulness training for stress prevention and can be used if these criteria are met: daily recurring experiences; relatively little time is taken up; patient enjoys it; not too many different raisins; and can be integrated into a ritual. Biofeedback is a psychosomatic method. The patient is exposed to a mild stress situation and the stress effect in the brain is visualized. The decisive factor is not the impact of stress on the brain, but the time it takes to return to a normal level. The visual representation gives the patient a good idea of the psychosomatic relationships. Those affected can use the curves to relate their feelings to their respective status.

Many patients suffer from the unfavorable combination of putting the basic needs of control and self-esteem in the foreground and neglecting pleasure gain and attachment. This imbalance leads to perfectionism, fear of the new, low adaptability, actionism, controlling others and increasing self-esteem to feeling inferiority, etc. These interplay of factors overwhelm the self, inevitably leading to burnout.

The approach in therapy is then to integrate more happiness and healthy relationships into the life of the person concerned. A central element of therapy should also focus on conflict management strategies. It is important for those affected to replace immature conflict management strategies with mature ones, so that they can recognize and experience the advantages of anticipation, sublimation and humor in everyday situations in which they have felt themselves to be victims and have become involved in auto-aggressive conflict management.

Overall, any form of prevention, therapy, and/or treatment of exhaustion or burnout are only sustainable only when taking careful considerations specifically of its origins and roots.