

'Grand theory of burnout'

Pathogenesis of burnout, progress of illness, framing of burnout in psychological and immunological theory. Physical measurement of burnout through immunology. Reconciliation of 'burnout as psychological concept' with 'main stream medical theory'.

Abstract. Nowadays, 2014, we 'celebrate' the fact that Freudenberger discovered and published about burnout forty years ago (Freudenberger, 1974). After Freudenberger, Maslach, Jackson and Leiter (1986) constructed and validated the Maslach Burnout Inventory. The MBI was of great value in psychological practice of burnout. Burnout research started, but to our knowledge the research burnout surprisingly seldom or never dealt with:

- pathogenesis of burnout
- neurobiology of burnout
- design of interventions (existing interventions known for other illnesses were tried on burnout, but no or little burnout-specific interventions were designed in 40 years of research)

Drawing on the most recent findings in immunology, including the 'behavioral immunity system' (Schaller 2010, Schaller and Park 2011, Schaller 2011, Miller and Maner 2011), we conceived an 'overall model' or 'grand theory' of burnout. As in our view the theory covers all existing knowledge about burnout so perfectly, to us it is 'self-evident', but of course the research world is invited to test all the hypothesis implied by this grand theory. An interesting aspect is that this 'grand theory' covers:

- the supplementary role of the immune system for threats/dangers that are not consciously recognized or perceived
- the explanation why neuroinflammation is found in cfs patients (Nakatomi & Mizuno & Ishi & Wada 2014) as well as – an illness very close to cfs – burnout (Blankert 2014)
- the integration of burnout into main stream medical theory.

1. Burnout in 1974 and thereafter

In 1974, burnout is described by Freudenberger as new psychological 'disease' or 'illness', characterised by a) emotional exhaustion b) some some form of cynism c) a low self esteem of own competences.

These three aspects of burnout were taken by Maslach, Jackson and Leiter (1986), and worked out into a burnout test, that was called after one of the three, Christine Maslach: the MBI, Maslach Burnout Inventory.

In the years thereafter, the MBI was used world wide, and was of great help in diagnosis of burnout, and the substantiation of burnout.

In order to be recognised as 'medical illness', an 'illness' must also:

- (preferably) describe its 'deviation from ideal/normal situation' in terms of 'biology' or 'chemistry'. Physicians want (rightly or wrongly) to see somatic parameters differ from the 'ideal situation'. Emotional perceptions of patients 'an sich' are not sufficient for most physicians for an illness to be classified as 'illness'. When somatic parameters lack, psychiatrists come into play and they like to see a 'behavioral description' of the illness before acknowledging it and classifying it into the DSM (Diagnostic Statistical Manual)

- have a 'pathogenesis'. Very little research has been done on the pathogenesis of burnout in individuals; the vast majority of burnout research 1974-2014 deals with burnout research in groups, making distinction between professional groups and situations on meso or macro scale, but never on individual person scale. The study of pathogenesis and progress of illness is required in order to be useful and fit into medical world.
- have a 'progress of illness'. The majority of burnout research in our view lacked focus on the longitudinal aspect of the illness
- have treatments. To our knowledge no treatment methods for burnout was designed; the research world confined itself to take existing therapies of other psychological fields and apply them to burnout.

This resulted in a somewhat 'lukewarm' acceptance of burnout by the medical world.

2. Behavioral Immune system

Our 'grand theory', which we will present in paragraph 3, requires understanding of the 'Behavioral Immune System'. We refer to Miller and Maner (2010), Schaller, Miller, Gervais, Yager and Chen (2010), Schaller (2011) and Schaller and Park (2011). The biological immune system is well known, consisting of the innate and adaptive immune system.

The last years much research was conducted on the BIS, Behavioral Immune System, and this proved to be a very successful concept. For its survival, a living organism avoids threats and dangers, for a large part 'subconsciously' through automated psychological learning and psychological mechanisms that are not part of our conscious thinking. The BIS and BIOlogical systems influence each other in both directions. Miller and Maner (2011) provided the evidence that the biological immune system activates the behavioral immune system, and Schaller, Miller, Gervais, Yager, Chen (2010) provided evidence that the behavioral immune system activates the biological immune system. These findings are crucial in our 'grand theory' of burnout.

Folk sayings as 'I am (emotionally) allergic to that situation' already point in the direction of the immune system.

3. Scheme of the 'grand theory'

The grand theory was conceived by taking characteristics of burnout, burnout pathogenesis and burnout progress as experienced in the practice of burnout treatment at Stichting Burnout and taking characteristics of coping psychology as well as immune system. Together, these elements formed 'pieces of a puzzle' that was firstly put together in the form of a 'consistent overall scheme' on Wednesday September 10, 2014. This brought us some joy and 'Eureka' sensation.

Thereafter the overall scheme was refined. We present the scheme in Figure 1, and thereafter discuss it in paragraph 4.

Need for justice + Other emotional needs expected to be met at work



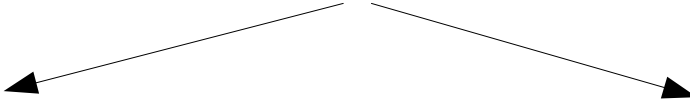
Series of work-contextual 'unmet need frustrations'



Series of emtional depletions



Threats, danger



Conscious cognition and perception (of unmet needs = threat/danger)

Unconsciousness cognition and perception (of unmet needs = threat/danger)

Conscious problemsolving

Behavioral immune system(BIS) sets in

Coping distress (not yet ill)

BIOlogical immune system: innate and adaptive

When resignation

BIS is learning

avoidance

disgust

a) emotional exhaustion +
b) resignation of solution seeking

= 'falling ill' = 'falling burnout'

BIOlogical immune system activated

Inflammation including neuroinfammation

4. Discussion of scheme of 'grand theory'

Burnout was, by Freudenberger as well as Maslach, defined as illness that would emerge at work, due to work related circumstances and interactions.

One comes to work with the expectation that some needs will be met (general psychologic theory):

- justice
- fair reward
- some social needs
- some needs of even 'self realisation' as Maslow liked to put it
- need for a break; concentration and work input should follow an 'anlogue' cycle of increase and decrease, including breaks
- need of some degree of freedom regarding one's actions

Workers probably do not come to work with the expectation of:

- all needs being met (as need for intimacy or sex)
- being involved as full person including all one's emotions
- private life being 'claimed' in work situations.

In Figure 1, we state that workers come to work with the expectation that their needs of justice and reward will be met, including some other needs of wich it is reasonable to expect they will be met at work.

As one one burnout practitioner knows, a series of work-contextual disappointments can start, for a worker. More and more needs are not fulfilled, while the initial expectation was that it was reasonable for them to be fulfilled at work. Need frustrations by definition emerge in context; the context of the worker in the physical work environment, the context of work culture, the context of interactions with specific co-workers regarding specific aspects of work.

Burnout is NOT an illness that happens purely within the brains or body; it is an illness related to the usual contextual interactions.

When needs are not met, but the situation continues, 'emotional depletion' or 'emotional exhaustion' is the generally accepted psychological consequence.

When a series of emotional depletions has taking place, the situation is being experienced as 'threat', of 'danger' by the individual.

This experience of 'threat' and 'danger' happens along TWO discinct ways, and this is the crux of our novel theory:

- the threat of danger is being recognised or perceived consciously, after which known reactions as 'flight of fight' take place
- the threat is also being recognised and perceived UNCONSCIOUSLY, and that is where BIS comes into play.

At the point the series of 'threats' has been long enough to

- a) deplete the worker emotionally
 - b) make the worker resign on active solution seeking,
- then illness = burnout starts.

As long as the individual is emotionally depleted, but is still working out ways of coping that do not seem hopeless to him, the worker may be in large distress, but has not 'fallen ill' or 'fallen burnout' yet. It is the overwhelming of social exhaustion together with the 'giving up of conscious solution efforts' that characterizes the 'fall' (and moment of fall) into burnout.

At the moment of 'falling ill' – 'falling burnout', it is part of our theory presented here that the biological system is activated in a direct way as well, not anymore 'just through the behavioral immune system'. Further research to confirm this is required.

The lower right side of Figure 1: the unconscious recognizes/perceives threats and danger as well (complementing the conscious recognition/perception). This activates the BIS.

Learning of the BIS system usually results in increased avoidance of threatening environmental cues, as well as disgust for the environmental threats (Oaten, Stevenson, Case 2011). This 'disgust' and 'avoidance' are visible in patients with severe burnout. Commands as 'return to work now' may be impossible to execute: the body refuses, not because the 'will' refuses, but because a 'deeper, unconscious force' makes return to work impossible (one cannot walk to the car, cannot turn the key, faints, etc.).

At this point it is useful to quote many physicians' view, that burnout emerges as consequence of 'inadequate adaption'. This is true in our model. Having said that, we like to remark that the immune system cannot adapt endlessly; it has its limits, and the immune system reaching its limits depletes energy resources, and causes 'irritability' or 'cynism' (Freudenbergers second characteristic of burnout). When an individual can no longer cope by the BIS, and work surrounding is NOT adjusted in a way that more needs are met and less unmet needs remain, the BIS calls the BIOlogical immune system to help. This is the case when the distressed 'patient' resigns his solution seeking and 'falls ill'. Latter is presumed to give the biological additional, direct cues.

The biological immune system causes:

- inflammation
- somatic responses
- and in chronic cases: neuroinflammation

The neuroinflammation is the phenomenon that causes 'cognitive impairment', which is a fourth characteristic of burnout, not covered by the MBI but being covered by the only other worldwide accepted and validated burnout test, the SMBQ and evidenced by Pandstro and Systro 2011, Luijtelaar et al. 2010, Van Dam 2013.

Therefore the ultimate proof of this 'grand theory' would be: the confirmation of neuroinflammation in burnout patients by e.g the same team that confirmed neuroinflammation in cfs patients (Nakatomi et al. 2014).

5. Proof of above theory

In this article we name only little references from literature, because about most what we say, literature is available in abundance, and the reader will easily find the relevant literature on <http://scholar.google.com>. The scarce mentioning of literature keeps the concentration optimal on the line of reasoning. The value added of this 'grand theory' hopefully consists of having solved the design of the 'overall puzzle' of burnout, from 'needs at the workplace', stress, to 'falling burnout', the precise definition of the moment one 'falls ill' having burnout, the interaction of burnout with the behavioral as well as biological immune system, and last but not least the explanation that neuroinflammation with burnout patients causes the impaired cognitive performance.

The ultimate and most elegant evidence would consist of the confirmation of immunological parameters being different for burnout patients versus controls. The ultimate immunological value of our theory is the explanation of 'neuroinflammation' in chronic burnout cases. We think the finding of neuroinflammation in cfs, chronic fatigue syndrom, by the RIKEN Center for Life Science Technologies in Japan in cooperation with the medical faculty of Tokio University, prof. Nakatomi et. al. (2014), is a landmark article in the field of 'psycho-somatic illnesses'.

It is the first and very convincing evidence of the 'physical reality' of cfs.

Currently, we are gathering burnout patients to repeat the experiment on purely burnout patients instead of cfs patients. But due the deductional article of Blankert 2014 ('Neuroinflammation in burnout patients') we expect the same convincing results as with cfs patients.

Only a total lack of finding deviating immunological parameters for burnout patients versus controls would 'falsify' above grand theory. In order to accelerate research in above area, we chose to publish above grand theory, that has large 'face value credibility', so others, with more resources than <http://burnout.university>, can conduct research affirming of falsifying our 'grand theory' of burnout.

6. Use of 'grand theory' for design of interventions

The availability of a first 'grand theory' of burnout including pathogenesis provides a very good ground for the invention of burnout treatments, varying from novel psychological treatments, rearrangement of work surrounding, up to even pharmaceutical intervention lowering the level of neuroinflammation in burnout and thereby improving cognitive performance in burnout patients. In latter case it must be warned that 'suppressing a symptom' is seldom the right long term solution.

Jean Philippe Blankert, 13 September 2014, published on <http://burnout.university> and Researchgate.net , info@burnout.university

References

- Blankert J.P., 2014, 'Neuroinflammation in burnout patients', <http://burnout.university>, Researchgate.net, DOI: 10.13140/2.1.4390.8481
- Boudsocq M. & Sheen J. (2013) 'CDPKs in immune and stress signaling', Trends in plant science, Volume 18, Issue 1, January 2013, Pages 30–40. Elsevier
- Curtis, V., de Barra, M, Aunger R (2011), 'Disgust as an adaptive system for disease avoidance behaviour', Silos, Royal Society\
- Dam., Arno van, (2013), 'Studies on cognitive performance in burnout', dissertation Nijmegen university 2013.
- Freudenberger, H.J. (1974) 'Staff burn-out', [Journal of social issues - Wiley Online Library](#)
- Frostegard J. & Ulfgren A.K. & Nyberg P. & Hudin U. (1999) 'Cytokine expression in advanced human atherosclerotic plaques: dominance of pro-inflammatory (Th1) and macrophage-stimulating cytokines', Atherosclerosis Volume 145, Issue 1, 1 July 1999, Pages 33–43. Elsevier.
- Gupta S. & Paterson M. & Von Zweck C. & Lysaght R. (2012) 'Using Hermeneutics to Understand Burnout and Coping Strategies Utilized by Occupational Therapists', Qualitative Report, v17 Article 105 2012. ERIC
- Grippio A.J. & Scotti M.A.L. (2013) Halaris A, Leonard BE (eds): Inflammation in Psychiatry. Mod Trends Pharmacopsychiatry. Basel, Karger, 2013, vol 28, pp 20–32 (DOI: 10.1159/000343965)
- Harte S.C. & Spuz C.A. & Borszcz G.S. (2010) 'Functional interaction between medial thalamus and rostral anterior cingulate cortex in the suppression of pain affect', Neuroscience Volume 172, 13 January 2011, Pages 460–473. Neuroscience. MIT Press.
- Iwata M. & Ota K.T & Duman R.S. (2013) 'The inflammasome: Pathways linking psychological stress, depression, and systemic illnesses', Brain, Behavior, and Immunity Volume 31, July 2013, Pages 105–114. Elsevier.
- Kuljis R.O. & Colom L.V. & Rojo L.E. (2013) 'Biological Basis for Cerebral Dysfunction in Schizophrenia in Contrast with Alzheimer's Disease', Front Psychiatry. 2013; 4: 119. nih.gov
- Luijtelaaar G., Verbraak M., Van den Bunt M., Keijsers G, Arns M. (2010) 'EEG findings in burnout patients' psychiatryonline.org
- Maes M. (2011) 'An intriguing and hitherto unexplained co-occurrence: Depression and chronic fatigue syndrome are manifestations of shared inflammatory, oxidative and nitrosative (IO&NS) pathways', Progress in Neuro-Psychopharmacology and Biological Psychiatry, April 2011. Elsevier.
- Maslach C. 1986 & Jackson S.E. & Leiter M.P. (1986) 'Maslach Burnout Inventory'. OutcomesDatabase.org

- [Miller, S.L. and , Maner, J.K.](#) (2011) - 'Sick body, vigilant mind the biological immune system activates the behavioral immune system', *Psychological science*, pss.sagepub.com
- Miller, S.L. & Maner, J.K. (2012), 'Overperceiving disease cues: the basic cognition of the behavioral immune system', *electronic journal*, 2012 PMID 22329656
- Nakatomi Y. & Mizuno K. & Ishii A. & Wada Y. (2014)
 'Neuroinflammation in Patients with Chronic Fatigue Syndrome/Myalgic Encephalomyelitis: An 11C-(R)-PK11195 PET Study' in *Journal of Nuclear Medicine*, April 2014. *Journal of nuclear medicine*. SMNjournals.org.
- Neuberg, S.L., Kenrick D.T., Schaller M. (2011), 'Human threat management systems: self-protection and disease avoidance. *Neurosci. Biobehav. Rev.* 35, 1042-1051
- Oaten M., Stevensen R.,J., Case T.I. (2009), 'Disgust as disease avoidance mechanism'. *Psychol. Bull.* 135. 303-321 (doi:1037/a0014283).
- Pandstro L, Systro M., (2012), 'Impaired cognitive performance in patients with chronic burnout syndrome', *IJAFM*.
- Schaller, M., Miller, G. E., Gervais, W. M., Yager, S., & Chen, E. (2010). Mere visual perception of other people's' disease symptoms facilitates a more aggressive immune response. *Psychological Science*, 21, 649-652.
- Schaller, M. (2011), 'The behavioural immune system and the psychology of human sociality', *Roayl Society*
- Schaller M. & Park. J.P. (2011), 'The behavioral immune system (and whi it matters). *Curr. Dor. Psychol. Sci.* 20, 99-103 (doi:10.1177/0963721411402596).
- Ward N.S. & Brown M.M. & Thompson A.J. & Frackowiac R.S.C. (2003) 'Neural correlates of outcome after stroke: a crossectional fMRI study', *Oxford JournalsMedicine & Health Brain* Volume 126, Issue 6Pp. 1430-1448. Oxford University Press.