

1 PTSD: the plague of our times

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PTSD (Post-Traumatic-Stress Disorder) is not only a growing concern for the medical world, but a socio-economic issue, as more and more people are diagnosed with it, whole new groups like inmates and C-section born are vulnerable and the cost of dealing with it, either by treatment or suffer the social consequences of non-treatment, are huge. New developments, like more specific biomarkers, the role of certain hormones and the consequences for life-expectancy and health, shed

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light on what is as yet a too broad a diagnosis (in the DSM-V), while understanding the underlying dissociation and substitute identity formation mechanisms can help to find better diagnostic and therapeutic tools and procedures.

PTSD is associated with reduced cognitive and psychosocial functioning, fractured relationships, inability to maintain employment, substance abuse, and increased risk of depression and suicide. If we follow NIMH's (National institute of Mental Health of the USA) definition; *PTSD is a disorder that develops in some people*

who have experienced a shocking, scary, or dangerous event.

On their website¹ they state:

“It is natural to feel afraid during and after a traumatic situation. Fear triggers many split-second changes in the body to help defend against danger or to avoid it. This “fight-or-flight” response is a typical reaction meant to protect a person from harm. Nearly everyone will experience a range of reactions after trauma, yet most people recover from initial symptoms naturally. Those who continue to experience problems may be diagnosed with PTSD. People who have PTSD may feel stressed or frightened even when they are not in danger.”

There are other definition, like what is mentioned by Psychology Today: *Post-Traumatic Stress Disorder (PTSD) is a trauma and stress related disorder that may develop after exposure to an event or ordeal in which death, severe physical harm or violence occurred or was threatened. Traumatic events that may trigger PTSD include violent personal assaults, natural or unnatural disasters, accidents, or military combat.rethink.com*

The illness makes you re-live the event or rather the experience in some way, often unconscious, which causes distress and difficulty in day-to-day life. Symptoms may become worse if you are triggered, when you see, hear or smell something that reminds you of the trauma.

We focus on PTSD here in the context of identity formation and notably substitute identity formation, because despite the DSM-V and NIMH classifications, in many and especially the more complex cases it really is an identity problem, and goes deeper than the superficial personality. Many mental and personality problems can be seen as inner identity conflicts, the sense of self being damaged with various symptoms like depression, flashback memories, suicidal tendencies, hyper- and hypoarousal, but also learning problems, behavioral aberrations, often addiction and much more.

The subject of PTSD was chosen as a focal point of this book because it's quite an epidemic these days, and because it is more and more seen as a dissociation and identity conflict, so the idea of Substitute Identity is relevant. But there is more, PTSD therapy is very much the result of trial and error, methods like EMDR (Eye Movement Desensitization and

1 www.nimh.nih.gov/health/topics/post-traumatic-stress-disorder-ptsd/index.shtml

Reprocessing) do help but there is no clear understanding why or how it works. Exposure therapy, working with memories, comes in so many forms, these days even with the help of virtual reality, and is seen as an effective approach but lacks again a clear theoretical framework and there is the risk for the traumatized individual that subsequent “re-traumatization” could occur

PTSD is seen as mostly a mental problem, part of the DSM-V (Diagnostic and Statistical Manual of Mental Disorders (DSM) classification. It’s in the mind, one assumes, which kind of ignores the anchoring of traumatic experiences in the body. This, while effective therapy approaches with like EMDR, EFT and PSYCH-K use somatic procedures and notably body polarity.

This may have to do with the limited way Western medicine and psychology deals with it, more symptomatic than holistic. Eastern medicine traditions offer a more holistic approach, like looking at meridians (energy lines) and the polarity of the body in more than just the brain.

Another point is that the role of hormones like cortisol and oxytocin are not widely seen as part of PTSD and only recently part of the research curriculum and then often seen as less relevant². The role of the adrenal glands and the hypothalamic-pituitary adrenal (HPA) axis feedback in PTSD is also not very well recognized in the allopathic Western medical approach, this while fight or flight responses that are usually present in traumatic circumstances are so clearly related to the hormones produced in these glands. Intense fear, helplessness, self-absorption or horror as experienced in PTSD cases are related to these organs and hormones.

It is well noted that PTSD is no longer something only war-veterans suffer from, it has become an umbrella, a diagnostic coat hanger with a DSM-V label these days, with many more groups at risk, like emergency workers and people in prison, but also people growing up in bad conditions. Traumatizing experiences, incidental or for a longer time, can lead to suppressing the memories or rather the emotions connected to the situation, they become what Bradley Nelson³ calls ‘trapped

2 Iris-Tatjana Kolassa, Cindy Eckart, Martina Ruf, Frank Neuner, Dominique JF de Quervain, and Thomas Elbert; Lack of cortisol response in patients with posttraumatic stress disorder (PTSD) undergoing a diagnostic interview. BMC Psychiatry (2007) PMID: PMC2175503, PMID: 17916253

3 Nelson. Bradley; The emotion code (2007)

emotions'. They have become unconscious, but still affect us, often in very nasty ways.

PTSD is trying to behave sanely in an insane situation

Stanley Krippner

Prof. Krippner tries, with this quote, to free the notion of PTSD from its reputation as a disease, as only a negative phenomenon. He points out that many way of dealing with a situation are simply the best option available for a individual who is in a double-bind, a horrendous relationship, or an oppressive environment. They are considered pathological or the after-effects are considered pathological, but this is a judgment that may affect and hurt the survivor.

PTSD, within the DSM-V is classified as a Trauma and Stressor-Related Disorder, no longer as an anxiety disorder, but also not regarded as an dissociative disorder like DID (dissociated identity disorder) or related to identity conflicts and substitute identity formation.

This chapter and the next one focus on this particular way of trauma processing, being complex PTSD or posttraumatic-stress disorder and then mostly related to veterans, war and combat. But trauma processing and their effects are of course not limited to that. Even auto-immune diseases can be related to earlier trauma.

The focus on PTSD in veterans is a practical one, because the most extensive and accessible research into trauma processing at this time is related to veterans. Not that this has led to unambiguous insights. Even as there is much data, and there are many different therapies and experiments, there is no conclusive understanding of why PTSD and related complaints occurs, why and what disposition factors influence the process, etc. It is therefore an interesting challenge to look into the relationship of identity and trauma, the dissociation associated with it and see how the SI-model (substitute identity) might apply.

That much of data here are concerned with veterans does not mean other causes of PTSD are less relevant. Prison situations, emergency services, sexual abuse, criminal violence, the effects of early childhood situations, those deserve attention too, but there is less access to large datasets and broad therapy assessment than in the case of veteran-PTSD. Especially the relationship of PTSD and extreme violence like in terrorist 'lone wolf' attacks is relevant. Not because terrorist are special or exceptional,

we all experience at times extreme aggression, but usually we have no AK-47 at hand to express this.

A disease of the West and specifically of the USA

The incidence of PTSD in the USA is markedly higher than in the rest of the world⁴, about twice as high as in Western Europe and compared to countries with a more traditional culture the difference is very obvious. The PTSD worldwide is monitored by the World Health Organization (WHO), which published estimates for lifetime PTSD prevalence range from a low of 0.3% in China to 6.1% in New Zealand and 7.8% in the USA. In much of the rest of the world, rates during a given year are between 0.5% and 1%, higher where war or public unrest prevails.

This difference may have to do with increased individualism, lack of social connectivity, cultural differences, lack of spiritual reference, the educational system, economic competition, but surely deserves a lot more attention. This not only because of the direct and indirect (social) costs, but because PTSD seriously affect not only the lives of the patients, but their social circle and their sense of safety, happiness and meaning.

The incidence of PTSD has a lot to do with the interaction between the cultural and social identity of the people and their personal identity and identity problems. Can one expect a soldier, engaged in a battle he or she sees as unjustified, disproportional or even criminal, to deal with trauma as well as someone who feels a holy mission and is willing to accept hardship, injury and death to serve a higher goal? The incidence of PTSD can be interpreted as a general touchstone (acid test) to indicate the intrinsic health and wealth of a society or culture, much beyond the common references to material wealth.

Too broad a label

The term *post-traumatic stress disorder* is descriptive but applied to a very broad range of symptoms, it has become an umbrella for dissociation, trauma and depression. It is, at least in the DSM-V approach a socially-constructed label that Western mental health workers have affixed to noticeable changes in someone's behavior, attitudes, and/or values following accidents, natural disasters, armed combat, rape, torture,

4 www.ptsd.va.gov/professional/ptsd-overview/epidemiological-facts-ptsd.asp

abuse, sexual assault, and a host of other threatening experiences (Young, Allan 1995)⁵.

Beyond the individual suffering from PTSD in veterans, the most publicized group of victims, the term and the diagnosis is applied more and more; it has become nearly a household term. It is a label for dysfunctional behavior, a disorder, but obviously so common that it is part of the human condition. We can qualify certain symptoms as PTSD, but dealing with extreme adverse situation and the trauma they cause and the traces they leave is a necessity for all of us, from our birth onwards. We can all have upsetting memories, feel on edge, or have trouble sleeping after significant experiences (not only the negative) but we react within a normal range and don't see this as pathological. But when such symptoms linger on, get more intense and the trauma processing disrupts normal functioning, it is then deemed a disorder. This diagnosis, however, is a more or less arbitrary position on a continuum of trauma processing symptoms. Or widening the perspective, a continuum of ways to deal with stimuli and situations.

With the reductionistic list of symptoms we of course run the risk that looking at the proverbial elephant from all sides we miss the grand picture of what an elephant really is. To understand PTSD beyond assigning a list of symptoms, beyond the deconstructional approach, we have to understand how humans (and maybe animals, they suffer trauma too) react to their environment and to real or perceived threats, what happens in their bodies, nervous systems and in their brains? What are the root mechanisms, what makes one deal with an incident in such an extreme way, that we call it a disorder? Why do some suffer from it, others walk away from a similar situation without the burden? Why is the interplay between personal and social cultural identity so important, what are underlying patterns, causes and how do they manifest.

Just isolating PTSD as something that happens to a few unlucky ones or to just veterans returning home means ignoring that society as a whole may be in a PTSD situation. What we see in veterans seems just the tip of the iceberg. For many, including veterans, PTSD started much earlier than the traumatic (combat/war/abuse) situation, it has roots in infancy and early youth, in social deprivation and socio-economic adversity; some of us are predisposed and this may even be hereditary. It is also clear that some cultures have more PTSD incidence than others, and this

5 Young, Allan; *Inventing post-traumatic stress disorder* (1995)

DSM-V: PTSD diagnosis

The more or less 'standard' diagnosis in this manual of the American Psychiatric Association's classification and diagnostic tool is what is used in "official" diagnose procedures, and although here a different approach is advocated, the DSM-V diagnosis is of course relevant. DSM-V indicates it as a "trauma- and stressor-related disorder"

To be diagnosed with PTSD in DSM-V, an adult must have all of the following for at least 1 month:

- At least one re-experiencing symptom
- At least one avoidance symptom
- At least two arousal and reactivity symptoms
- At least two cognition and mood symptoms

Posttraumatic stress disorder (PTSD) is defined and listed in the DSM-V as a mental disorder that can develop after a person is exposed to a traumatic experience, such as sexual assault, warfare, traffic collisions, or other threats on a person's life. Symptoms may include disturbing thoughts, feelings, or dreams related to the events, mental or physical distress to trauma-related cues, attempts to avoid trauma-related cues, alterations in how a person thinks and feels, and an increase in the fight-or-flight response, suicidal tendencies, substance abuse and even reduced life-expectancy. To qualify for PTSD the symptoms must last more than a month, are not due to substance use, medical illness, or anything except the event itself and be severe enough to interfere with relationships or work to be considered PTSD.

PTSD is usually diagnosed by using the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) in an 30-item structured interview or the PCL checklist. A DSM-V PTSD diagnosis is thus based on long lists of symptoms and conditions and how serious they are, but is in the end a judgment call. And given the consequences of such a diagnosis, thus open to manipulation from both sides, including malingering.

The addition of a **dissociative subtype** of PTSD as part of the DSM-V was based on three converging lines of research: (1) symptom assessments, (2) treatment outcomes, and (3) psychobiological studies. A subgroup of PTSD patients (roughly 15 - 30%) exhibits additional symptoms of dissociation, including depersonalization and derealization, and the subtype of PTSD specifically focuses on these two symptoms.

means the culture, the education and the lifestyle are factors too. The USA is one of the most vulnerable and this justifies asking some nasty questions, like what is the role of fear (so stimulated by the media and politicians) and the need to be an individual and have success in this? Is a culture full of ego-symbolism, competition and identity conflicts causing all this PTSD?

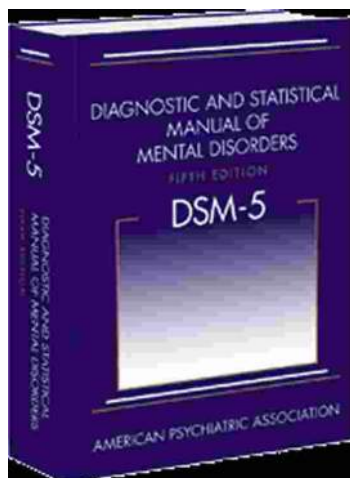
Unspecific and too vague

The labeling of PTSD as a general mental disorder, with just very limited sub-categories (dissociation, young age, complex) and with a diagnose protocol that involves little 'hard' biological data and is mostly based on fairly subjective interpretation of symptoms with quite some risk of faulty diagnosis, wrong assessment and malingering from both patient and evaluator side, is not specific and needs an update.

The DSM-V diagnosis (by qualified professionals) is strictly symptomatic, based on interviews and questionnaires (sometimes clinical administered, some self reported) and not always consistent.

Notably the inclusion of (ill defined) dissociation symptoms, and development stages not properly identified as either normal trauma processing, acute stress disorder (ASD), lingering but healing ASD after the artificial period of one month, substitute identity formation, late-onset stress symptomatology (LOSS) or even overlap with DID (Dissociative Identity Disorder) makes the whole label or category less effective, to say the least. Recognizing PTSD and related disorders as basically an identity problem, may be a suggestion.

This diagnosis has become so broad (and trendy some say) that nearly every normal person suffers from it, as we all have lived through trauma of some kind, starting with or even before childbirth. The official numbers vary, but it is estimated that in the United States about 3.5% of adults have PTSD in a given year, and 8-9% of people develop it at



some point in their life, it is more prevalent in women⁶. About 10 of every 100 women (or 10%) develop PTSD sometime in their lives compared with about 4 of every 100 men (or 4%). but for people in combat it is much higher (15-20%). About 8 million adults in the US suffer from PTSD during a given year.

PTSD has become a media item and a national concern after it became clear that a substantial number of the millions of troops involved in the Vietnam, Iraq and Afghanistan war (until 2007 approx. 1.64 million U.S. troops have been deployed in Operations Enduring Freedom and Iraqi Freedom⁷) suffered from it. Major depression (14%) and traumatic brain injury TBI (19%) are other deployment legacies. Sleeplessness, depression, suicide, addiction, suicide attempts and extreme acts of aggression were among the symptoms. For many, PTSD, TBI and major depression are a reality, one third of all deployed people has one of the three, meaning more than half a million people, and this only from the Iraq and Afghanistan operations until 2007. As of June 2016, (according to MAPS) more than 868,000 veterans were receiving disability compensation for PTSD, with an estimated taxpayer cost of \$17 billion per year. Approximately 7% of the U.S. population, and 11-17% of U.S. military veterans will suffer PTSD in their lifetime. PTSD is estimated to affect about 1 in every 3 people who have a traumatic experience, but it's not clear exactly why some people develop the condition and others don't. Individuals with PTSD are six times more at risk of committing suicide.⁸ In the general population, 27% of suicides are associated with PTSD.

PTSD as one of the most visible mental disorders or disturbances (although ADHD probably comes close) probably existed all through human existence, but only came to light because of what happened to soldiers in the World Wars. They suffered from shell shock or combat neurosis, but PTSD was given its now so common designation after the Vietnam War.

6 www.ptsd.va.gov/public/ptsd-overview/basics/how-common-is-ptsd.asp

7 Terri Tanielian, Lisa H. Jaycox, *Invisible Wounds of War Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery*, Rand Corporation (2008)

8 Sarah Knapton, *The Telegraph* (UK) Sept 14, 2017

Not just veterans, ex-prisoners and PISC

The number of people suffering from PTSD might be much larger than now officially recognized, if we would for instance include victims of abuse and rape, emergency workers (firemen, police, ambulance, emergency rooms in hospitals) and those who have been in the prison system. Especially in the US, with the largest prison population (per capita) in the world and averaging roughly double the time served (63 months) elsewhere (Australia 36), roughly 1% of the population is incarcerated and another 2% in the judiciary system (probation, parole etc.). Together more than 7 million in the correctional system⁹ and probably 20 million or more having been in the system¹⁰. There may be many millions who already have symptoms or will develop something, which people like Terence T. Gorski¹¹ labeled as PICS (post incarceration syndrome). It turns out (PICS) or PISD¹² (post incarceration stress disorder) is a serious factor that contributes to relapse and recidivism (60%) in addicted and mentally ill offenders who are released from correctional institutions. His concept has emerged from clinical consultation work with criminal justice system rehabilitation programs working with currently incarcerated prisoners and with addiction treatment programs and community mental health centers working with recently released prisoners. Already those in prison suffer; overcrowding, supermax prisons and extended solitary confinement, racial and ethnic disparities, the general dehumanizing conditions of an increasingly commercialized (privatized) prison system contribute to rising numbers of mentally ill inmates and what is termed “internal controls atrophy”, a loss of moral decency. The Bureau of Justice Statistics (BJS), *Mental Health Treatment in State Prisons, 2000*. (NCJ 188215) in July, 2001 reported 16% of prisoners nationwide are mentally ill. But the numbers are growing, according to the BJS statistics, over half of all prisoners in 2005 had experienced mental illness as identified by “a recent history or symptoms of a mental health problem”. Not only do people with recent histories of mental illness end up incarcerated, but many who have no history of mental illness end up developing symptoms while in prison.

9 www.bjs.gov/index.cfm?ty=pbdetail&iid=5870

10 Wagner, Peter: www.prisonpolicy.org/reports/pie2016.html

11 Gorski, Terence, www.tgorski.com/ criminal, since 1999

12 Craig Haney: *The Psychological Impact of Incarceration: Implications for Post-Prison adjustment* (2002)

Types of PTSD

The National Center for PTSD in the US¹⁴ indicates more subcategories; They see five main types: normal stress response, acute stress disorder, uncomplicated PTSD, comorbid PTSD and complex PTSD.

The normal stress response occurs when healthy adults who have been exposed to a single discrete traumatic experience in adulthood suffer from intense bad memories, emotional numbing, feelings of unreality, being cut off from relationships or bodily tension and distress. Such individuals usually achieve complete recovery within a few weeks.

Acute stress disorder is characterized by panic reactions, mental confusion, dissociation, severe insomnia, suspiciousness, and being unable to manage even basic self care, work, and relationship activities. Relatively few survivors of single traumas have this more severe reaction, except when the trauma is a lasting catastrophe that exposes them to death, destruction, or loss of home and community.

Uncomplicated PTSD involves persistent re-experiencing of the traumatic experience, avoidance of stimuli associated with the trauma, emotional numbing, and symptoms of increased arousal.

Complex PTSD is a result of repetitive, prolonged trauma involving harm or abandonment by a caregiver or other interpersonal relationships with an uneven power dynamic, such as childhood sexual abuse. Judith Herman¹⁵ proposed an even wider description of C-PTSD addressing the circumstances of multiple (prolonged and repeated) trauma's sometimes throughout the lifetime, as opposed to PTSD, because of abuse, hostages, prisoners of war and concentration camp situations, totalitarian control, hostages.

Comorbid PTSD

PTSD comorbid with other psychiatric disorders is actually much more common than uncomplicated PTSD. PTSD is usually associated with at least one other major psychiatric disorder such as depression, alcohol or substance abuse, panic disorder, and other anxiety disorders. The best results are achieved when both PTSD and the other disorder(s) are treated together rather than one after the other.

14 National Center for PTSD in the US, www.psychcentral.com/disorders/ptsd/

15 Herman, Judith; Trauma and recovery, The aftermath of violence from domestic abuse to political terror (1997)

Compared to the cost of PTSD in veterans, the incidence of PISD may be a multiple. The cost of US incarceration¹⁵ taking into account social cost, effects on children of inmates, etc. is already estimated to be more than 1.000 billion, but long term effects and costs may be even more and PISD may be a very expensive affair for future generations.

The formerly incarcerated also have a mortality rate 3.5 times higher (apart from in-prison violence) than that of people who have never been incarcerated. This premature aging effect is also well researched at the DNA level and documented for those diagnosed as PTSD by the Veterans Administration¹⁶ but also observed in the general population as the result of depression and anxiety like in the CDC-ACE study¹⁷ about the effects of adverse childhood experiences.

Following Gorski, the Post Incarceration Syndrome (PICS) is a mixed mental disorders with clusters of symptoms like:

- *Institutionalized Personality Traits* resulting from the common deprivations of incarceration, a chronic state of learned helplessness in the face of prison authorities, and antisocial defenses in dealing with a predatory inmate milieu,
- *Post Traumatic Stress Disorder (PTSD)* from both pre-incarceration trauma and trauma experienced within the institution,
- *Antisocial Personality Traits (ASPT)* developed as a coping response to institutional abuse and a predatory prisoner milieu, and
- *Social-Sensory Deprivation Syndrome* caused by prolonged exposure to solitary confinement that radically restricts social contact and sensory stimulation.
- *Substance use disorders* caused by the use of alcohol and other drugs to manage or escape the PICS symptoms.

PICS often coexists with substance use disorders and a variety of affective and personality disorders.

Gorski warns that the effect of releasing large numbers of prisoners with psychiatric damage from prolonged incarceration can have devastating

15 Matt Ferner, Huffington Post, Sept 13, 2016: The Full Cost of Incarceration in the U.S. is over \$1 Trillion, and about half of that falls upon the families, children and communities of the incarcerated.

16 Research on Military Veterans, lifespan Implications of Military Service, PTSD Research Quarterly, National Center for PTSD (2009)

17 Kaiser CDC study: www.cdc.gov/violenceprevention/acestudy/about.html internal study 1995-1997

impacts upon society like including deterioration of inner city communities, the destabilization of blue-collar and middle class districts unable to reabsorb returning prisoners who are less likely to get jobs, more likely to commit crimes, more likely to disrupt families. This could turn many currently struggling lower middle class areas into slums.

Biomarkers, a new perspective

A biomarker in medicine is an objectively measurable sign of a disease or condition: a molecule, gene, brain pattern or characteristic that shows up in a test.

The diagnosis of PTSD is still largely a matter of interpretation of self-reported symptoms and is not (yet) based on clear biological markers like specific activity or anomalies in brain regions, certain sequences in DNA, the existence of a virus or a bacteria in the body, clogged arteries, hormonal misbalance, specific markers in molecules in blood or specific brain (dis-)functionality or connectivity etc. So far there are no easy biomarkers to diagnose PTSD, also because the symptoms of the disorder are many and heterogenous. There are some telltales like small hippocampal volume that indicates predisposition and indications that epigenetic markers (methylation patterns, miRNA damage) may play a role.

The availability of more objective criteria and biomarkers is badly needed¹⁸. Lots of work here. Sam McLean stated it:

Yes, we're really living in the dark ages of post-traumatic stress diagnostics.

Better and specific biomarkers are also needed because PTSD, as mentioned before, is not (yet) a clear and unambiguous diagnosis with biomarkers that prove the condition, but more of an umbrella term with a diagnostic spread of subtypes. Better specifications and defining more clear sub-categories might help.

A problem here is also the comorbidity, additional disorders, associated mental health problems and complaints appear and often there is other damage. like TBI (traumatic brain injury) because of physical blunt force trauma to the brain, hearing (combat blast exposure), etc.

There are, however, more and more potential biomarkers identified and this is where there is some real progress concerning PTSD diagnosis,

18 McLean, Sam, University of North Carolina in: PBS NewsHour: War on the Brain (March 2017)

treatment and even prediction of susceptibility. Research looks at blood tests, MRI and echo scanning, RNA and DNA damage evaluation (genome decline), thermographic (temperature of skull, face and specifically nose area) indicators, adrenal function and cortisol levels, but also psychomarkers and voice analysis etc. could help in narrowing the diagnostic spread and ‘human factor’ noise.

As remarked by Michopoulos¹⁹ the potential avenues for the identification of diagnostic biomarkers for PTSD include, but are not limited to, monoaminergic transmitter systems, neuroendocrine effects in the hypothalamic-pituitary-adrenal (HPA) axis (like cortisol reactivity), metabolic hormonal pathways, inflammatory mechanisms, psychophysiological reactivity, and neural circuits. Some of these biomarkers could also indicate increased risk for the development of PTSD.

PTSD comes with augmented levels of catecholamine secretion, norepinephrine (NE) and alterations in the serotonergic system like decreased levels of paroxetine binding and serotonin (5-HT).^{20 21}

Psychophysiological biomarkers of PTSD

The autonomous hyperarousal symptoms of PTSD like heart rate (HR), blood pressure (BP), skin conductance (SC), respiration rate (RR), muscle contractions, iris contraction, and body temperature can be measured, these days with devices like smart bands and EMG electromyography, but it requires advanced software to identify the specific patterns for PTSD like an exaggerated startle response. This kind of e-health applications is rapidly advancing.

Neuroanatomical and neuroactivational biomarkers of PTSD

There is a lot of interest in using fMRI scanning to establish which parts of the brain are activated or have undergone changes, looking for bio-markers that would help diagnose certain disorders or even indicate

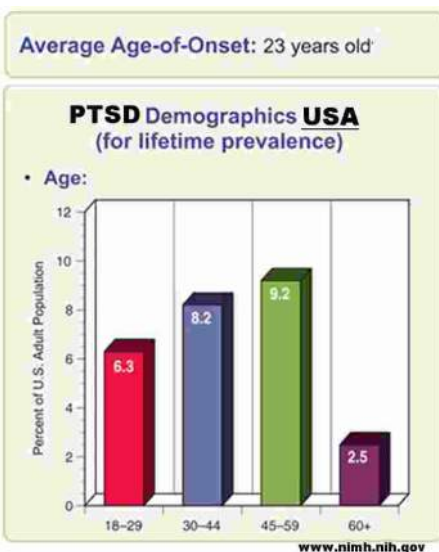
- 19 Michopoulos, Vasiliki, Davin Norrholm, Seth and Jovanovic, Tanja; Diagnostic Biomarkers for PTSD; Promising Horizons from Translational Neuroscience Research, Biol. Psychiatry. (sept 2015)
- 20 Yehuda Rachel; Neuroendocrine aspects of PTSD. Handb Exp Pharmacol. (1995)
- 21 Mouthaan J, Sijbrandij M, Luitse JS, Goslings JC, Gersons BP, Olf M. The role of acute cortisol and DHEAS in predicting acute and chronic PTSD symptoms. Psychoneuroendocrinology (2014)

where stimulation of the brain could be effectively used a remedy. Neuroimaging data gathered during the last decade demonstrate that PTSD is associated with greater amygdala activation compared to controls. Also the rostral anterior cingulate cortex (ACC) is less active in PTSD patients relative to controls; an effect not found in other anxiety disorders.

Genetics

There are genetic and epigenetic biomarkers of PTSD like the genes critical for the neuroendocrine regulation of the HPA-axis, but they are associated with other psychiatric conditions as well. Researchers headed by a team at Indiana University School of Medicine (professor Alexander Niculescu and the Richard L. Roudebush VA Medical Center)²² have identified blood-based genetic markers of psychological stress that could help scientists develop improved, earlier diagnostics for post-traumatic stress disorder (PTSD) and other stress disorders, and offer up new leads for the development of drug or natural compound-based therapeutics. Their evaluation indicated that some of the newly identified predictive biomarkers, including NUB1, APOL3, MAD1L1, or NKTR were comparable or even better at predicting the state of stress and stress trait than either TL (telomere length) or FKBP5 mRNA levels.

Looking at microRNA is a promising approach here. In September 2017 it was reported, at the annual meeting of the European College of Neuropharmacology in Paris, and this made it into an article in *The Telegraph*²³ (UK) that “Blood test for PTSD on horizon as scientists find genetic changes in traumatised soldiers”. Scientists from Maastricht



22 Roudebush, Richard; Towards precision medicine for stress disorders: diagnostic biomarkers and targeted drugs. *Molecular Psychiatry*

23 Knapton, Sarah; *The Telegraph* (UK), www.telegraph.co.uk/science/ (Sept. 4, 2017)

University (Laurence de Nijs) found crucial genetic changes, differences in the microRNA (miRNA) molecules, in soldiers suffering from trauma after serving in Afghanistan. MicroRNA regulates how active specific genes are, the epigenetic expression; they offer a kind of fingerprint. MicroRNA can circulate throughout the human body and can be detected in the blood, which makes it more practical. This kind of research confirms VA (veterans) findings that there is distinct genetic degradation in PTSD victims based on biomarker findings telomere length (TL), which is another well-established biological marker of psychological stress. Their life-expectancy is shortened and they are more prone to health problems. This also could be the case for groups like (ex-)inmates and many more group with higher risk to experience trauma. Post-traumatic stress disorder (PTSD) affects up to 7 in 100 women after giving birth. Having an emergency c-section increases the risk of getting PTSD (for the mother).

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The PTSD Biomarker Database (PTSDDDB) is a database that provides a landscape view of physiological markers being studied as putative biomarkers in the current post-traumatic stress disorder (PTSD) literature to enable researchers to explore and compare findings quickly. The PTSDDDB currently contains over 900 biomarkers and their relevant information from 109 original articles published from 1997 to 2017.

Predisposition

Predisposition (PTSD Predictor) models show that childhood trauma, especially with peritraumatic dissociation, chronic adversity, and familial stressors increase risk for PTSD, but also later trauma experienced in adulthood leaves biological markers of increased risk for PTSD after a 'new' traumatic experience.

A study by Mirjam van Zuiden in the Netherlands basically took a thousand soldiers, before they went into combat, and looked at cortisol and glucocorticoids receptor measures and markers, as well as genes and epigenetic markers of the glucocorticoid receptor. They found that low

- 24 Lopez, U, Meyer, M, V. Loures, V. Iselin-Chaves, I. Epiney, M. , Kern, C. and Haller, G.; Post-traumatic stress disorder in parturients delivering by caesarean section and the implication of anaesthesia: a prospective cohort study; PMCID: PMC5457569 Health and Quality of Life Outcomes. (2017)

cortisol and enhanced glucocorticoid receptor sensitivity were predictors of people that had PTSD a few months later.²⁵

There seems to be a genetic predisposition for PTSD (30% hereditary), as research in twins in the Vietnam war proved, but it is not yet very clear how this can be used to predict PTSD. There are shared genetic influences common to other psychiatric disorders, addiction, panic, anxiety disorders, which complicates the matter.

Some of these predispositions and markers are shared with DID (multipersonality) but the hereditary transfer is not recognized, even as some (non genetic) social or environmental heredity exists and some epigenetic marks are hereditary.

Diminished life-expectancy

We cannot diagnose PTSD (yet) by way of clear and easy biomarkers, but there is quite some research in what the effects are, the comorbidity and the negative impact on life and health. This means that PTSD negatively affects one's potential life-span. Aging (degradation, telomere length) of the DNA²⁶ is now one of the more substantial biomarkers to predict life-expectancy. DNA methylation (DNAm) research, looking into the epigenetic expression of certain genes, yielded evidence of a superior metric of cellular age. We can now predict the chronological age of certain genes, their epigenetical biological clock and assess potential damage.

The research²⁷ suggests that post traumatic stress disorder seriously reduces life-expectancy, not only because of telomere shortening, but because of a multi-tissue DNAm age algorithm. A study of U.S. Department of Veterans Affairs (VA) healthcare users also found that Veterans with PTSD had more than twice the risk of developing dementia as those without the disorder and also there is increased risk of heart diseases.

- 25 Van Zuiden, M, Kavelaars, M. A., , E Geuze E., Olf, M, CJ Heijnen, CJ. Predicting PTSD: pre-existing vulnerabilities in glucocorticoid-signaling and implications for preventive interventions, in *Brain, Behavior, and Immunity* 30 (2013)
- 26 Vijg, Hans; *Aging of the Genome: The Dual Role of DNA in life and Death* (2007)
- 27 Wolf, Erica, Logue, Logue, Mark et al. Accelerated DNA Methylation Age: Associations with PTSD and Neural Integrity, in *Psychoneuroendocrinology* (2016)

Substitute Identity Model

The existence and emergence of substitute identities, which manifest as separate personalities, is far more common than is assumed. Most of us have them, as distinct ways to deal with the world, but in the formal psychology approach they are only identified as separate in diagnoses like DID (dissociate identity disorder). That there are such identifiable structures is well known, in the literature they are mentioned as alters, masks, self-states, psychological satellites, modi and in transpersonal psychology, a sub-personality is a mode that kicks in (appears on a temporary basis) to allow a person to cope with certain types of psycho social situations. But this is not how most people see it: we like to stick to the belief that we are an indivisible, immutable, totally consistent being and our identity is what we experience as the continuity of our 'self'.

However, looking at identity as the totality of what defines us, and which is expressed as the decisions and (often unconscious) choices between individuality and community, between permanence and flux, we do appear to have different identities. The Eastern wisdom talks about the true and the false self, while the notion of the inner child as a deep, hidden identity is well known across cultures. Many, in fact most people do have more identities than the core and the primary identity that developed in early childhood as a defense coping mechanism. These substitute identities emerge because of significant experiences, like trauma or awakening, where extreme dissociation (identity discontinuity) and formation of a new identity is the way in which the psyche responds.

To understand the mechanism of substitute identities, to identify them concerning behavior, traits, world views and types, can be a great help in dealing with PTSD, auto-immune diseases and personality disorders, but also as a step towards personal growth and understanding one's life purpose.

In the substitute identity model (SIM) one of the assumptions is that more substitute identities increase the risk of identity conflicts with resulting unbalances and diseases and thus shorten life-expectancy, which

seems to be confirmed with the DNA findings concerning aging and telomere length effects.

Post Traumatic Stress Disorder as an identity issue

Identity problems are at the root of many medical and especially psychosomatic problems, so let's look at one of the most prominent complaints these days. PTSD is seen by many in the field as an identity disorder, as a condition somewhere between normal dealing with adverse situations and the more extreme identity disorders and multi-personality syndrome.

This is, however, not the way the DSM-V of the American Psychiatric Association or the somewhat less strict International Classification of Diseases ICD-11 counterpart (ICD-11-CM F43.10) (a draft update from ICD-10 including a complex PTSD classification) describe PTSD as a trauma- and stressor-related disorder, not as an identity disorder. DSM-5, from the earlier DSM-IV, expanded the context of PTSD from a fear-based anxiety disorder to a disorder that also includes anhedonic/dysphoric and externalizing phenotypes, emotions like shame, anger and guilt. This meant removing PTSD from the anxiety disorders, but not yet classifying it as dissociative, except for a specific subcategory. The number of clusters of PTSD symptoms required to qualify for a diagnosis was increased from 3 to 4, with avoidance and numbing symptoms split into separate clusters and expanded to represent avoidance and persistent negative alterations in cognition and mood. The expanded symptoms include persistent negative evaluation of self or others, elevated self-blame, a negative emotional state, and reckless or self-destructive behavior.

Post traumatic means it is a condition that is caused by a traumatic experience, that is a situation or event that is experienced by the person as traumatizing. Note that here the stress is seen as a symptom, not as the root cause, which is the traumatic experience. Stress in life or leading up to the actual event or events can be a factor, but in PTSD it refers to what happens afterwards, as part of the way the incident is dealt with. It involves all kind of problems, sleeplessness, depression, flashbacks, addiction, hyperarousal (overexcited) or hypoarousal (slowing down), but the general term for the whole complex is stress.

What biomedical mechanism exactly causes PTSD is not totally clear. One of the more recent theories by Abelson and Liberzon²⁸ contends that people with PTSD appear to suffer from **disrupted context processing**. A core brain function is for people and animals to recognize a particular stimulus as requiring different responses depending on the context in which it is encountered. It's what allows us to call upon the "right" emotional or physical response to the current encounter. Context processing involves a brain region called the hippocampus, and its connections to two other regions called the prefrontal cortex and the amygdala and these are disrupted in PTSD patients. By showing how a disruption in this circuit can interfere with context processing, this theory aims to explain most of the symptoms and much of the biology of PTSD.

This disrupted context approach combines a couple of models/hypotheses. The first, abnormal fear learning, is rooted in the amygdala - the brain's 'fight or flight' center that focuses on response to threats or safe environments. The second, exaggerated threat detection, is rooted in the brain regions that figure out what signals from the environment are "salient", or important to take note of and react to, with vigilance and disproportionate responses to perceived threats. The third, involving executive function and regulation of emotions, is rooted in the prefrontal cortex, and serves keeping emotions in check and planning or switching between tasks.

Liberzon argues all these models work together when seen as falsely or inadequately dealing with a context. He points out that context is not only information about one's surroundings - it's pulling out the correct emotion and memories for the context one is in.

This context approach is not very far removed from the idea, that identity discontinuity problems (and dissociation is also the way we respond to stimuli in a context) and thus disrupted responses to situations are at the root of PTSD.

Not all traumatic experiences lead to a trauma with PTSD or to longer lasting identity problems and can thus be called traumatizing. Not every traumatized person develops ongoing (chronic) or even short-term

28 Liberzon, Israel and Abelson, James : Context Processing and the Neurobiology of Post-Traumatic Stress Disorder, Neuron (2016)

(acute) PTSD, not all experience a rupture of their sense of self (identity), time, and cognition.

Sometimes people do have very serious symptoms following a traumatic experience that go away after a few weeks. This is then called **acute stress disorder**, or ASD. The normal, not pathological, process of dealing with trauma and the resulting stress is fairly natural, indeed something we have inherited from our animal ancestry. Because of the specific human capability to calculate and parse time ahead (Michio Kaku²⁹) we know and hope that the initial effects wear off.

Healthy dealing with trauma is similar to the grieving process, with stages like:

- Denial: being shocked or numb, is natural dealing with overwhelming emotion with a defense mechanism by escaping or shutting out feelings.
- Anger: the pain of the loss or trauma may induce feelings of frustration and helplessness, which may later turn into anger, directed toward other people, even victims, a higher power, or life in general.
- Bargaining: in this stage one dwells on what one could've done to prevent it. "If only..." and "What if..."
- Depression: some sadness sets in upon understanding the effects, both physically or emotionally and this may be felt as overwhelmed, regretful, and lonely.
- Acceptance: the reality is what it is, it can't be changed and moving forward with life is the only option.

To understand and support these stages after a traumatic experience can prevent later pathological deterioration. It is also important to integrating the emotional and the bodily, we have memories stored in our organs and limbs and using techniques of embodied cognition like EMDR (Eye Movement Desensitization and Reprocessing) can help.

Therapy options should be considered also in the context of a belief system; belief and faith is an important part of one's identity. Indigenous cultures will often have some kind of ritual, like ritual cleansing or purging and dancing or even a party after dramatic events, this helps to re-sensitize and integrate. The body and the mind both store memories and the dissociation between the two cannot be ignored and needs repair, also a kind of penance to let go of the feelings of guilt is quite com-

29 Kaku, Michio, *the Future of the Mind* (2014)

mon. In the Bible, ritual cleansing is also prescribed for Hebrew soldiers after a battle.

Understanding natural healing of traumatic impact and dealing with the wider social psychological effects, also on the people around, has not been a standard part of the medical inventory, especially in the de-spiritualized West. It is, however, becoming more normal to weigh in the emotional and intangible damage these days, the impact on family and society. Trauma support techniques and services, also for the caretakers and buddies have been developed and are available.

Subtype classification

DSM-V has defined subtypes, like the dissociative subtype, where depersonalization and derealization comes into play. This subtype comes closer to what here is indicated as substitute identity formation and may manifest as depersonalization and derealization.

DSM-V is not universally accepted as the final verdict. In the literature there are many attempts to redefine PTSD or identify subtypes that are more relevant than the general DSM-V or ICD groupings.

PTSD subtypes are mentioned as based on the type of the incident like:

- Victim-related trauma with the patient is in a passive role.
- Natural disasters, such as a tornado, earthquake, or hurricane.
- Survivor guilt. The patient is not a perpetrator, symptoms are related to surviving while others close to the patient did not.
- Perpetrator guilt, often not initially disclosed.
- Single event, multiple events/single episode, multiple events.

The state of mind during the potentially traumatizing event, but also during the recovery period is very important, and this has to do with the identity and the psychological structures of a person. The crux of the diagnostic difficulty resides in the individuality; we all have a different pre-disposition to events that shocks us physically, mentally, or morally. The label is too broad and individual differences are not really identified as relating to the various symptoms, development and healing processes and options. It remains a matter of trial and error, which can be fairly costly and even limit the recovery options.

Another subtype approach is that one has recognized three personality-based subtypes of PTSD: externalizing (acting out), internalizing (depressive) and even a mild form of the disorder ('low-pathology

PTSD'). This is a step towards including personality typology in the study of PTSD.

Dissociation; Identity related discontinuity

In the DSM-V the trauma and stressor related (conversion) disorders (including PTSD) are separated from identity disorders like DID (dissociated identity disorder), while in view of the development model about identity it makes sense to see them both as identity related. This view is also supported by trauma researcher Ellert Nijenhuis³⁰ who proposes a single category of trauma-related disorders. The perspective, however, that positive experiences, an epiphany, spiritual realization or awakening can also lead to identity developments, discontinuities, or substitute identities, but with positive results (post traumatic growth), is usually ignored in the thinking about trauma. Nijenhuis³¹ does mention positive dissociative symptoms. The trance of a shaman, which may have to do with traumatic or dissociative experiences in his training, is clearly entering a dissociative state, but is this negative or pathological? The realization at some stage, as the result of therapy, medication or as a spontaneous insight, that whatever happened was a necessary lesson and thus a positive step in one's development, gives a new and even positive perspective.

Moral injury and trauma, meaning

The trauma causing PTSD can be **physical/material, mental. emotional or moral** and mixed, both active (perpetrator/victim) and passive (spectator). Moral injury is not specified explicitly in most studies, but is a major factor in one's identity. We are what we are, because of how we make moral choices, and this is quintessential in the way others see us. Research into how people tend to associate moral traits with identity over other mental or physical traits (Strohming and Nichols, 2015)³² shows that even in cases of severely damaged capabilities like in demen-

30 Nijenhuis, E.R.S.. The Trinity of Trauma: Ignorance, Fragility, and Control (2016)

31 Van der Hart, O., Nijenhuis, E.R.S. e.a. Trauma-related dissociation: conceptual clarity lost and found, in Australian and New Zealand Journal of Psychiatry (2004)

32 Strohming, N, Nichols. S.: Moral capacities form the core of how we perceive individual identity in Neurodegeneration and Identity. Psychological Science (2015)

tia and neurodegenerative diseases it is the moral identity that is mostly valued.

Dealing with a traumatizing event can, especially in the case of an identity discontinuity, substitute identity formation, result in a new balance between social and individual values, a new morality. Especially in cases where the trauma is based on active participation and intention, like killing someone, torture of others, abuse, but also directing drones and such, this plays a role. Guilt and shame are two aspects of what we could call the “moral injury cluster” of PTSD. The real, or imagined guilt and shame are factors that may be suppressed initially, but need attention. Specific approaches like storytelling, artistic expression and mirroring emotions in a ‘safe’ environment and setting may be of value here.

The moral redirection as the result of an experience can take unexpected paths, like an identification with the enemy, captor, abuser (Stockholm hostage syndrome, capture bonding). If this diverges too much from the old morality this can become part of the inner struggle. Morality is a complex issue, good and bad are not always opposites, especially in traumatic circumstances. Even the concept of death is fluid, as the suicide bombing trend illustrates.

Morality, as has been explained in the chapter about moral identity (14) is about the position a person (and the culture forming that position) takes concerning justice, truth, integrity, but also concerning meaning and values. Ethical behavior is how that works out in practice. It is the result of judgments between right and wrong, but these are based on the individual’s moral identity image, how the individual thinks of him/herself as an ethical person.

Belief systems, like the position versus death and the afterlife, play an important role. Social and individual goals, security and freedom are not on a single axis, but are independent dimensions, but with a common direction, i.e. aiming for happiness or meaning.

Signs and Symptoms

There is research that indicates that neurotransmitter levels are affected and that there are even deep DNA-effects and genetic predispositions. Many PTSD patients develop other disorders and complaints like depression, substance abuse, anxiety disorders and it also has an effect on the whole body or organs like the heart (comorbidity effects) and life-expectancy is shortened. The course of the illness varies, but there no clear models for how PTSD develops over time, sometimes it is com-

pared with grieving. Sometimes the problems only last a limited time, but there are chronic cases.

A different perspective and classification

In the context of the Substitute Identity Model (SIM), where some, not all traumatic experiences lead to substitute identities, we can divide PTSD in two major groups:

- The more or less simple PTSD: no substitute identities formed, but with many of the usual stress symptoms.
- The more complex PTSD, which is the result of the emergence of substitute identities, with usually also stress and dissociation symptoms, but with distinct substitute-identities (but not so extreme as in DID) that are activated by specific circumstances and triggers.

In the second group in this sense the actual traumatic incident is deeper hidden in the unconscious and only surfaces when the person is in the emerged, substitute identity or when deeper probing with the help of hypnosis or other techniques reaches into the unconscious levels.

The identification of substitute identities, as the result of the specific traumatic experience or already present before, is not an easy job and requires trained professionals, but maybe modern technology like big-data analyzing of sensor data over a longer time may help here. Brain scan approaches offer a potential way to help in this process, but also techniques like infra-red temperature scans of the facial expressions or advanced voice analysis could be used, not unlike and thus with the same practical limitations as lie-detectors, galvanic skin response measurement etc..

Dissociation in the moment of trauma (peritraumatic dissociation) obviously is a fundamental part of the process, but there are dissociation symptoms in the trauma processing later too. In the aftermath of a traumatizing experience people also experience dissociation symptoms. They escape from the memories, the depression and the stress by checking out (unwillingly or willingly like by taking drugs), and here the whole range of dissociation symptoms can surface, from just daydreaming via out-of-body experiences to identity shifts, sometimes seriously affecting behavior like in DID.

Resilience

Some people are more likely to develop PTSD, others seems to be resilient. Resilience refers to the ability to thrive despite adversity and is de-

defined as a multidimensional phenomenon, spanning internal locus of control, sense of meaning, social problem-solving skills, and self-esteem.

Resilience, which has neural correlates in blood oxygen level-dependent signal strength in the right thalamus as well as the inferior and middle frontal gyri (Brodmann area 47) is a factor³³ in the development of the disorder. Factors that favor resilience include:

- Seeking out support from other people, such as friends and family
- Finding a support group after a traumatic experience
- Learning to feel good about one's own actions in the face of danger
- Having a positive coping strategy, or a way of getting through the bad event and learning from it
- Being able to act and respond effectively despite feeling fear

There are also cultural differences that affect resilience. Studying the way some cultures actually inflict what could be seen as traumatic impact like in initiation rituals do not lead to PTSD, but affect the initiates in a positive way. Anthropological research into the way indigenous and older cultures dealt with stress, war and trauma may shed new light on the root mechanisms at play.

In a really traumatic situation, with the formation of a substitute identity, the memory of the trauma is usually so suppressed, that normal recollection doesn't work. In other words, the dissociation, the checking out of self-continuity is not remembered and things like hypnosis, regression therapy etc. are needed to bring them to the surface and these are not part of the normal diagnostic process.

We could even suggest, that those who do remember the experience, have not dissociated and are thus a less serious case of PTSD. But as the systems requires some dissociation symptoms, they will be produced, the mind is very compliant.

A person who is relaxed and centered in their cognitive mind at the time of the incident will probably not suffer emotional trauma. Someone in the same incident who is already in a state of heightened emotion - anger or anxiety - will react to the incident in a different way. People who have already suffered trauma in their childhood or later in life will more likely be suffering from generalized anxiety. In their case the limbic sys-

33 Daniels JK, Hegadoren, KM, et al.: Neural correlates and predictive power of trait resilience in an acute traumatized sample; a pilot investigation, *J Clin. Psychiatry*. (2012).

tem, where flight/fight responses reside) is already energized and primed and the prefrontal cortex is depressed by the emotional state so they are less able to process and respond appropriately to the incident and instead react emotionally, utilizing automatic emotionally driven behavior patterns stored in the hippocampus. The result is heightened emotional response to the event and more severe dissociation, resulting in emotionally unresolved memory traces which will normally require processing later in REM sleep.

The relation between sleep and PTSD is complex. Individuals with insomnia prior to trauma exposure are more likely to develop PTSD following the exposure, indicating that disturbed sleep increases vulnerability to PTSD (Gehrman et al., 2013)³⁴.

Insomnia occurring and fragmented REM sleep in the acute aftermath of a traumatic experience is also a significant risk factor for the later development of PTSD³⁵.

Typologies and PTSD vulnerability, predisposition

Even as we all experience dramatic events, only a small percentage (5-10%) of the population develops PTSD. The incidence of PTSD depends on genetic factors and early childhood experiences, but the question is can we predict it? What is clear is that there are specific traits, like moodiness, anxiety, envy and anger, that predispose for PTSD.

Looking at specific traits or types that have a higher risk in contracting PTSD³⁶ indicates there are indeed ways to predict susceptibility to the disorder. It turns out, based on meta-studies, that PTSD is positively related to negative emotionality, neuroticism, harm avoidance, novelty-seeking and self-transcendence, as well as to trait hostility/anger and trait anxiety. On the other hand, PTSD symptoms are NOT associated with extraversion, conscientiousness, self-directedness, the combination of high positive and low negative emotionality, as well as with hardiness and optimism, while posttraumatic growth (the positive out-

34 Gehrman, Philip; Behavioral Sleep Medicine Program, Univ. of Pennsylvania (2013)

35 Mellman, Bustamante, Finchs, Pigeon, Nolan: REM sleep and the early development of posttraumatic stress disorder. *Am. Journal Psychiatry* (2002).

36 Nenad Jakšić, Lovorka Brajković, Ena Ivezić, Radmila Topić & Miro Jakovljević, *The Role of The Role of Personality Traits in Posttraumatic Stress Disorder (PTSD)* (2012)

come of a trauma or awakening experience) shows inverse relation to most of these traits.

Typologies like MBTI, Big Five or Enneagram could help establishing which therapies are the most effective given the personality type, could be helpful here, as long as is understood that some people either already had substitute identities (personalities) or the trauma has created one. Also the original (core identity) type plays a role, but once the identity matrix is diagnosed, specific treatment could be suggested. An example could be visualization (hypnosis, psychedelics, VR) with a specific theme for each personality type complex.

In the MBTI typology (see appendix 28 for details) it was found³⁷ that IT types were more likely to suffer from Post-Traumatic Stress Disorder (PTSD) and that 64% of the tested Vietnam veterans with PTSD had either an ISTP, ISTJ or INTP profile.

Group mind and social identity effects

An important angle when looking at PTSD and trauma is the influence of the environment, the social and cultural context at the time of the trauma incident and later, during initial processing and in therapy. It must be noted, that in many indigenous and classic initiation rituals the participants are exposed to potentially very traumatic experiences, but don't seem to come out of the ordeal with long term damage like PTSD. There the purpose, set and setting are obviously creating a situation with (mostly) beneficial effects, of course within the cultural setting.

Being part of a group, during the incident or later, can be a deciding factor in how it is processed and group interaction in the post-trauma therapy model can be seen as a mandatory part of any therapy model, but is not recognized as such by the medical establishment.

Understanding how group cohesion, moral Umfeld (is the war justified in the eyes of the warrior), posttraumatic support, homecoming rituals and integration back into 'normality' affect the incidence and severity of PTSD is a field that needs more research. Studying the procedures, process and group mind mechanism of older cultures may shed light on this.

37 Coolidge. L. Hook, *An Empirical Investigation of Jung's Psychological Types and Personality Disorder Features*, (2001)

Ritual and community support

Concerning what we can learn from older cultures, there is much; war and trauma are not new. There are ancient ways to prepare for war, deal with trauma, help the homecoming soldiers. There are rituals to help ease the ruptures experienced by those traumatised by warfare, which we could learn from today, like having a dance after a battle or hunt, not only to part and boast, but to dance and rebalance the body. Odysseus's travels after the battle of Troy (as analyzed by Jonathan Shay) is a case in point.

Just copying old customs in some way is, however, not always the right approach. Psychological debriefing (talking about the event, for instance was, in the past, the most often used preventive measure, directly following an event with counseling and interviews that are meant to allow individuals to directly confront the event and share their feelings and to help structure their memories of the traumatic experience. This treatment has since been found to be potentially harmful.

These questions, how can we learn to deal with trauma from other cultures have been asked and here and there we see relevant work, like using age-old psychedelic healing formats applied to PTSD or references to "Ancient Warrior Rituals" like Karen O'Donnell³⁸.

Ritual has been a traditional form to deal with stressors and trauma in society on a personal level and in the community. Prayer, grieving, penance, forgiveness and absolution, many ritual aim at bringing deep and maybe repressed emotions to the surface, create a group mind environment where this can be shared. Group therapy and 12 step programs are maybe a poor substitute, but can be a basis for contemplation, release and support. In the case of soldiers before and after missions, when there are disasters involving groups of victims, a ritual approach may be a first step to alleviate the trauma impact. Martial arts, a ritualized form of combat, may be a treatment modus. And homecoming parades, re-accepting the victorious veterans were a good tradition, but as the moral justification of wars is fading, who welcomes the braves home?

Ritual cleansing, bathing or otherwise purification of body and mind, is also a very old practice. Coming back from a battle there are feelings of guilt, of inferiority (not having been brave enough, not having saved the

38 O'Donnell, Karen: How PTSD Treatment Can Learn from Ancient Warrior Rituals. (theconversation.com) (2016)

next guy, fear of being labeled a coward) and rituals like doing penance, purging, confessing one's fears help to deal with the trauma. Giving thanks to the spirits, remembering those who were left behind, singing victory songs, telling, even creating stories and myths about the heroic acts (also from the enemy or the hunted animals), all was part of how older traditions dealt with war and trauma.

The whole military apparatus and its identity of course relies on ritual, from the training procedures to the haircut to the saluting and ranking rituals. Ritual is what holds an army together.

Ruptures

The memories of traumatic experiences are often repressed, stored in the unconscious, but may come to the surface later, haunting the person. Initially however, there is dissociation, we break away from what happened, we don't want to feel (in the body and emotional) and we don't want to know or understand what we did or saw. This breaking away is sometimes called rupture. Karen O'Donnell lists identity as one of the three major ruptures of PTSD:

“Trauma ruptures a person's sense of identity. They no longer know who they are. They struggle to identify with the person they were before they experienced the trauma....”

The other ruptures are time as an invasion of the past (as in flashbacks) and disrupted cognition. O'Donnell does not mention existential crises but they often involve a challenge to “personal myths” such as “life is fair and just”.

Pre-trauma personality defects

Some people experience a dramatic event as just a nuisance, some get ill, and some even turn it into a positive influence like in posttraumatic growth (PTG) and awakening experiences. This has to do with predisposition due to genetic influences, upbringing, social environment and culture, earlier trauma traces, pre-trauma situation, peri-trauma conditions and the aftermath and support and why not, divine grace.

The differences in trauma reactions (including pre- and post-trauma) are based on culture, worldview and preparation, but according to many researchers mostly to the personality (traits). There are a number of models, that link specific traits to trauma impact and have been confirmed statistically, but as these also influenced the DSM-V conditions (and the changes it underwent) for PTSD there is a bit of self-confirmation bias

in the whole approach. The models confirm by lengthy questionnaire analysis that specific traits, often in cumbersome wording, resonate with PTSD incidence, vulnerability, severity and resilience. This makes clear that those traits are a factor, and even that such traits may be the result of earlier trauma and childhood conditions, have genetic roots or are epigenetically passed on to the next generation, but there is no underlying model explaining why this is so. This is the same approach used in many typologies like the Big Five (FFM, see appendix) and certainly has predictive value, but has not yielded a clear model of the relationship between PTSD and identity, as the substitute identity model (SIM) attempts. Also these models are mostly limited to psychological markers and psychopathology, the relation with physical traits and somatoform PTSD symptoms (like motor anomalies or tics) are rarely mentioned. The pre-trauma personality approach seems valuable, but lacks a good understanding of how trauma, dissociation and change in general fits into our human condition. The paradoxes of life, for instance that 'wise' people often have a history of trauma and adversity, are mentioned, but not explained. It is good that we know that certain emotional characteristics, but also trauma history, post-trauma support, intelligence, living situation, life style, belief systems, expectations and attributions affect how PTSD affects a person, but what we really need to know how this can be used to prevent the negative impact and help people heal or at least cope with the symptoms. It is argued here that the root identity formation processes as the root of personality are what we need to study and understand better. There lie the causes of what plays out in the personality, in the lifestyle and epigenetically in how things develop, in the mind and the body, even at the cell level.



2 Treatment perspective: PTSD

Diagnosing PTSD is one thing, but what can be done to help people suffering from this disorder? Looking at the various approaches to help people with PTSD it may be relevant to first look at what is missing in the more general and accepted therapies. PTSD is a multisystem condition, not just mental, but somatic and should be studied and treated in that perspective, more holistic, not separating the mind and the body into different spheres. As mentioned before, the holistic insights of the Eastern traditions like ayurveda didn't find their way into Western medicine and psychology approach of PTSD (yet).

One of the Eastern insights is the importance of polarity, the difference between left and right, front and back. Hemispheric polarity is acknowledged in the brain, but that most of the body shows such polarity and this should be honored in diagnosis and therapy is less accepted. Yet the methods considered therapeutically effective for PTSD like EMDR (Eye Movement Desensitization and Reprocessing) do use this polarity in some way.

The cortisol angle

There are a few relatively new perspectives in PTSD diagnosis and treatment and cortisol is certainly one of them. The organs where a traumatic experience hits most, like the adrenal glands and the flight or fight response and stress hormones like cortisol, are not normally part of the diagnostic process concerning PTSD, which is mostly seen as a mental problem. Yet there is growing evidence¹ that extremely stressful adverse experiences have a lasting impact on the neurobiology of the stress response, the hormonal stress system and notably the hypothalamic-pituitary adrenal (HPA) axis, where eventually the stress induced adrenocorticotrophic hormone (ACTH) is released with cortisol as the final product in the adrenals, with oxytocin to bring back the cortisol levels. The adrenals have many functions, but one of them seems that they act as 'emotion-ears', they resonate with the emotions of other people and when this function is damaged or misbalanced, which might be

1 Yehuda, Rachel. Advances in understanding neuroendocrine alterations in PTSD and their therapeutic implications. *Ann N Y Acad Sci.* (2006)

the effect of traumatic experiences (PTSD), this may affect other somatic or mental functions.

The stress hormone Cortisol, according to Rachel Yehuda², is a key player in the subtle hormonal changes that have come to be associated with PTSD. PTSD patients show a different (somewhat lower) level of cortisol release which was already noted in 1986 by J. Mason³. Glucocorticoid treatments in PTSD cases are an interesting avenue, also as an augments of the more standard psychotherapeutic approaches. Cortisol levels might also be a biomarker for predicting later PTSD in people. It seems that cortisol levels will impact PTSD symptoms, also affects the susceptibility for PTSD due to a later trauma and the resilience in actual cases. And in this adrenal/cortisol perspective there are ways to prevent PTSD just after a traumatic incident, within the timeframe of the 'Golden hours' (0-8 hrs) when the person may be supported to deal with the trauma or before a potential traumatic incidence like in surgery. Cortisol level and the HPA history might setting the stage for subsequent trauma reactions, Yehuda suspects. It is relevant to note that there are glucocorticoid receptors in almost every cell in the body and cortisol affects many vital processes.

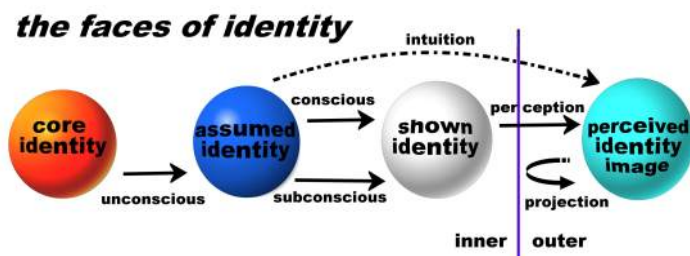
There are many ways and levels where and how a therapist or psychiatrist (or priest, shaman etc.) could deal with the psyche, the personality or the soul. The enormous array of therapeutic methods and theories illustrates this, there are libraries full of books and therapeutic institutes and methods galore, these days even using psychedelics is taken seriously. The problems is that no therapy is effective for all and that most therapies only work for some people.

This is not so surprising, therapies (apart from medication, chip implants, lobotomy etc.) are human interventions, and they usually do work, the therapist is the main factor anyway. The person of the therapist and his empathic qualities and experience are at least as important as the method used, as Carl Rogers and many others have argued.

- 2 Shaily Jain, in *Psychology Today*; Cortisol and PTSD; An interview with Dr. Rachel Yehuda (2016)
- 3 Mason John W.; Giller, Earl L.; Kosten, Thomas R.; Ostroff, Robert B.; Podd, Linda ; Urinary Free-Cortisol Levels in Posttraumatic Stress Disorder Patients; *The Journal of Nervous and Mental Disease*: (1986)

The therapy spectrum

There are, also because of the lack of a single generally accepted therapy protocol, scores of other therapies, with or without supporting medication, like nightmare resolution therapy and present-centered therapy, group therapy, sleep therapy, psychodynamic therapy, hypnotherapy, trauma desensitization and beyond that alternative therapies like bio-energetics, mindfulness-based stress reduction, regression, breath-work, acupuncture, and including diets, injecting or snorting oxytocine, smoking marihuana, relaxation training, biofeedback, transcranial magnetic stimulation (Colin Holbrook), neurofeedback, animal intervention/interaction, emotional expression (artistic, musical, storytelling) meditation, all kinds of exposure therapy like narrative exposure therapy, imaginal exposure therapy, virtual reality exposure therapy and much more, even playing Tetris computer games has been suggested as a treatment (Emily Holmes). Most approaches are claiming some success, and in individual cases could be preferred over the standard methods but are not (yet) listed as evidence based (and paid



for) by insurers, the VA, etc.

There are many experiments and even a willingness to look beyond existing therapy models, like into the effects of psychedelics, as the costs and risks of PTSD (like in the quite common substance addiction, in suicide, but also in extreme aggression and even terrorism) are substantial. Treatment can be symptomatic, helping people to cope with the condition, but it would be better if the root causes, like the trapped emotions related to the trauma, could be addressed and released effectively.

PTSD is big business

There is a big market in PTSD therapies, it's quite a business where visibility and public relations play a role and often making a profit may count more than helping the clients. The image of the therapies, the

Questions and suggestions

In the context of PTSD we list a number of questions, not necessarily because we can answer them, but because they contain suggestions and maybe help to get a new perspective.

- Why do we only look at symptoms and not at the root mechanisms, notably identity changes and identity substitution.
- Would a subdivision of PTSD not based on symptoms, but causes and personality type, help in focusing treatment.
- Are the dynamics of the trauma-process, how the perspective can change over time, part of the treatment model; there are victims and perpetrators, in retrospect this distinction and the guilt perspective can shift.
- Why is trauma only seen in a negative context. Some dramatic events in our lives are very positive, or turn out positive even after an initial negative impact (post traumatic growth and spiritual emergence)? Why do some emerge out of trauma situations a better person, a hero, leader, saint, a great 'Mensch'.
- How important is moral injury (apart from physical, emotional and mental) and do shame and guilt play a role.
- The individual's capability to deal with trauma plays a role, what is the influence of education, training, supportive environment, health, psychic structure and yes, genetics, family history, faith, culture, moral stance. Are there DNA- or RNA or in general biomarkers to identify problems or predisposition, as recent research suggest.
- In a transpersonal psychological perspective, are traumatic experiences not part of our human development towards self-realization. Our personality is the result of dealing with conditions, many adverse, starting with pre- and peri-natal trauma. The division in intentional and unintentional trauma is an issue here.
- Could we use techniques of older and indigenous cultures to deal with PTSD, notably ritual, as a way to cope with individual issues and trauma but also a social group mind phenomenon, could be a fruitful avenue for dealing with PTSD.
- PTSD is mostly seen as an individual thing, but what role do group mind phenomena play, in smaller groups during an inci-

dent, in the treatment and as the process of giving up individual morality to the group, which may lead to moral injury later.

- How does the background of PTSD-patients, not only what type they are, but the social milieu, education, gang history, religion, etc. and thus the level of 'understanding' or wisdom, relate to potential excessive anger and aggressive behavior like the Baton Rouge and Dallas shootings by veterans. Could such behavior be predicted and prevented?
- Why and when does symptom reactivation, defined as early symptoms followed by a period of 25-30 years without symptoms, followed by renewed symptoms (in 11% of the case), occurs?

There are a few fundamental questions like:

- Can people change?
- Is therapy aiming at symptomatic fixing or fundamental healing?
- How does the developmental history of a patient influence disorder incidence and treatment outcome?
- Do we need to relive trauma in order to heal?
- What is the relationship between identity markers like history, predisposition and treatment options.
- Do snapshot test results like obtained with medical and psychological test give us a reliable image of the dynamic processes and do they account for the multiplicity of identities?

books written about it, the television shows, the articles in the popular press are often more important than the hard facts about effectiveness. There is a tendency, supported by the Veterans Administration (VA) and insurers, to standardize treatment by using protocols and strict guidelines for the various stages in a treatment, but this may take away from the personal and custom interaction. The fact that the standard approaches not always yield good results, also makes people look for alternatives.

Internet is an important factor as it informs clients, illustrates the options and these days has become a platform for on-line therapy too, which can be as effective as face-to-face consulting. The VA assumes that being informed about the disorder and the treatment options is an important

step towards dealing with it and helps in making information available, also online.

The essential questions, like lack of meaning

Before we roam through the many options for therapy a few observations. What we miss in most studies and projects is more specific information about the victims. Things like age, race, education and previous mental problems are relevant and for instance have revealed that lower income, lower education and early childhood abuse and less than optimal situations do cause a higher incidence of PTSD later. But is that news? We live in a world of haves and have-nots and those at the lower end of the spectrum live shorter, have less chances and face more health problems. We don't need DNA/RNA research to prove that!

What might be relevant in order to see how we can prevent and cure disorders like PTSD is to know how for instance meaning, the sense of being of some value, impacts the occurrence and development of this disorder. Meaning has to do with ethics and morality, one's worldview, but also the situation one is in. It's a tricky issue. For instance, can we expect the military to admit that most veterans developed serious doubts about the morality of their missions and suffer from moral injury? It is not the lack of meaning in our modern world, the sense of disenfranchisement, the utter emptiness of a life that leads not only to addiction, but to many other symptoms we now rank as PTSD? This disorder is not the prerogative of veterans, it's a telltale of a divided and increasingly unstable society.

We can spend lots of money on trying to deal with the results of this, like in what we do to help PTSD victims, but the root problems lie in whole generations growing up in the slums, facing gang terror, malnourishment, domestic violence and the resulting lack of self-worth. This is true for generations as the conditions are hereditary, and may have become part of the (epi-)genetic profile. When they join the army to escape from this and seek some career, they are already victims and PTSD from combat or just service is a symptom.

Thwarted expression

The notion developed here, maybe suggested is a better word, concerning PTSD (and maybe many other disorders) is that in the substitute identities (triggered by specific situations related to the original event) people are unable to express (feel) the normal reaction appropriate to the

situation. They find another way of expressing this, turn it onto themselves, become stressed, ill, develop tics, use drugs or other escapes, they harm themselves and sometimes others.

This concept has consequences, one being that when a person suffering from serious PTSD (the type with the substitute personality conflicts) finally comes to some kind of catharsis or abreaction (and may start hitting on others, gets on a killing spree, etc.) is the moment the identity conflict is resolved and the person direct the anger, frustration, hate to the outside.

The question that comes to mind then is, how can we help people to reach such a catharsis without the devastating effects we see when a veteran starts using his M-16 on innocent people? What therapy might be effective, and under what conditions.

Predisposition and prior trauma

What must be mentioned here is that even in veterans, PTSD may be the result of other situations than being engaged in combat. The traumatizing and insane situation leading to PTSD symptoms might be located in the past and the war situation just refreshes and triggers it. In military PTSD, only a minority of survivors actually saw combat. What traumatized the others? Earlier mini-traumas in their home environment, moving from a chaotic living situation to a regimented living situation, leaving a regimented living situation for a civilian living situation in which they could no longer function, etc. There is a stereotype about the “wounded warrior” but most of the PTSD survivors were never warriors. Many of the wounds came from “**moral injury**” discovering that the government had lied about the dangers to the country, their motivation for which they joined the armed forces.

There are a number of approaches in treating the PTSD symptoms that are considered evidence-based, but there is no clear-cut miracle cure. Some successes like with EMDR are reported, but there is no such thing as going to the local drugstore and get some pills or go on the internet and receive adequate treatment online. It may come, but for the moment, hesitation to follow institutional advice, practical considerations like the cost of treatment and also the lack of a clear and deep understanding of the root mechanisms have led to a multitude of experiments with therapies, specific for PTSD or borrowed from adjacent fields. Some work, in specific situations, for specific people, but it is hard to predict the results and some might even have negative effects, while the placebo ef-

fect cannot be ignored. The field is polarized. As an example, some therapies center on reliving the actual trauma and digging into the past, others refrain from self-disclosure. To pick the right tree in the forest of PTSD therapies is, as yet, a matter of trail and error, or as we hope, the domain of experienced and critical specialists.

Here we look at therapy from the perspective of seeing PTSD as an identity disorder with identity discontinuity symptoms and classifying therapies accordingly. The perspectives and deconstructions from the previous chapter, like a separation in physical, emotional and moral (cognitive) injury and the level of peri-traumatic dissociation are relevant, but hard to identify as many therapies, even as they have distinct labels and goals, in practice are often combined with other methods of a mostly eclectic nature and very much depending on the therapist, their experience and their training.

A critical view of the many studies and meta-studies reveals that the too general DSM-V label of PTSD, even with the dissociation subcategory, in the literature and research is not really honoring the differences in background, predisposition, actual trauma incident circumstances, trauma category and identity markers of the patients, like IQ, EQ, social-economic perspectives, etc. etc.

The politically correctness of not classifying patients in these respects is not really helping to identify the difference between effective, non-effective and damaging approaches. There are studies into specific cultures and groups, like gangs, emergency workers and of course veterans and even subgroups of veterans, but the individual differences are sel-



dom specified to a level, that for instance would help to recognize the predisposition in relation to therapy outcome. Even double-blind experiments are seldom specific, and as the recent crisis in physiological experiments illustrates, with so many ‘classic’ experiments now being discredited or deemed unrepeatable, approaches like self-reporting (the usual in PTSD diagnostics) are risky.

Do people change at all?

One of the important issues in understanding PTSD therapy is the question whether people can change in the first place. Can we repair the damage or can we just patch up some of the symptoms? There are approaches that say that our fundamental traits do not change; in the nomothetic (traits) approach to personality we see that the typology people (see appendix 28) have a similar claim, we essentially are what we are, our profile doesn’t change. That may be true, but the expression of that profile does change, we are and remain never the same.

There is, obviously, some adaptation and wizingen in our identity and thus personality (even as the fundamental traits and fixations remain the same), we grow and develop over time, alas not always in a positive direction.

Of course the question of treating people becomes a bit absurd, if we assume we cannot change them at all. That implies that even the traumatizing events have no effect, which makes the whole discussion senseless. So we have to assume that people change, they age, mature and develop, and this affects not only the body, but also the emotional and the cognitive state of being. The development models discussed in earlier chapters give more information about how such change is possible and in what direction and that in some cases, with the formation of substitute identities, we develop a whole new identity, which is certainly different and has different traits as the old one.

Outside in or inside out

When we talk about healing or curing, there is usually the question whether this should start from the outside, meaning a treatment at the biological level, an intervention, operation, drug or food regime, exercise, etc. or should it start from the inside, looking at the psychological state of the patient. Is the body or the mind the director, an issue we have discussed in the chapter about bodymind. There we argued both are interrelated and we should not forget the influence of our emotions and the otherworld, a holistic approach looks at the whole. It is a pity, that the

normal allopathic medical care usually starts with looking at the hard facts, measuring and testing, first looking for things to fix, symptoms rather than deep causes that usually lie deep within our psyche. Even as our means to test and diagnose have improved enormously, most testing and scanning is no more than a snapshot, a momentum. It shows the actual situation, but not how it came to be, how it evolves, where it is heading. Of course one can do more tests, look how things have developed in the interval, try to calculate the dynamics, but the emphasis on scanning and lab-results is strong; those are the hard data, the facts. As we have argued before, these hard data might apply to only one of our identities, there may be substitute identities; something, which in the case of PTSD is more than likely. Are the tests, lab results, scans referring to the same person (identity or self state) or has the patient shifted to another? Here it is important to note, that many of the physical markers lag behind, it is the psychological identity that shifts first. The body follows and many things change immediately, but there is a time delay, a trailing before the blood values, the neurotransmitter concentrations, etc. are really corresponding to the newly dominant identity. For instance a cancer cell, related to a specific identity and active or aggressive (only) in that identity, is of course still present (and shows up in scans) when an identity shift happens, but maybe not in that active state.

Therapeutic action fields: fixing or healing

The notion of multiple subjective self images (which are how the multiple substitute identities (SIM) discussed before are experienced), offers also a possibility of classification the various kinds of therapy, healing and analysis of these selves. It has been covered in connection with change and transformation, here the therapeutic angle is expanded.

The work (therapy) on the selves can be separated in three main groups, one covering the shown self and assumed self (or selves), one covering the assumed self image and a third, concentrating on the relationship between assumed self and inner me (core self). The illustrations in this chapter outline these approaches.

Western medicine is basically a symptomatic approach, in Eastern tradition the doctor is sometimes paid for keeping you healthy, in the rational understanding of the differences modern medicine paradigm we cure and heal when symptoms indicate something is wrong. There is preventive medicine, looking at food, exercise, predisposition etc. but a regular doctor or hospital deals with symptoms. This is a choice and in many

cases an easy one. A patient that comes in with a problem often needs immediate care, and the consequences of not treating are obvious. In psychotherapy the choices are often less clear, for not treating, using a placebo, promising participation in a program, etc. may yield positive results too.

It's an old discussion, is dealing with symptoms enough or do we need to go to the root of complaints and diseases and aim at fundamental changes at that (identity) level? Curing or just symptom fixing, why bother, if it works? The medical world is all about remedy, about fixing symptoms. Before we knew about epigenetics this issue was more of an academic or philosophical question, but now we know that just superficial fixing may cause later damage. For instance the damage caused by unresolved trauma (and notably substitute identity emergence) does have an effect on our health at the deeper level and can even be transferred to next generations.

The 'evidence based' (EBM) approach of modern medicine works, but is sometimes based on 'doctored' statistics and vested interests, and is not very suitable for multimorbidity (complex combinations); note the combination with the NNT (number needed to treat) criteria has led to a nearly perverse use of prescription drugs (50% of Americans use a prescription drug).

There are standardized ways to measure healing like the Global Assessment Functioning Score used to determine treatment effectiveness. But is that more than a generalized statistical estimate? Effectiveness is relative, in many cases we provide band-aids and maybe hope to prevent further degradation. It's unlikely that for instance we will be able to repair the damage to our DNA like the telomere (disposable buffers at the ends of chromosomes) degradation caused by prior experiences and trauma situations.

Is real healing not a process of becoming aware and thus self-healing? Recent studies in psycho-neuro-immunology underline the role played by self-healing, long advocated by shamans and indigenous healers anyway. Can the mind control the body without physical intervention, like we see in the effectiveness of placebo? We know now that brain structure and function can be permanently changed (neuroplasticity) by any number of factors ranging from meditation to psychotherapy, blurring the line between the Western constructs of "mind" and "body." and of what 'healing' means.

Research now indicates that by just coping or dealing with symptoms and fixing with medication, fundamental epigenetic processes related to aging are maybe NOT affected. The core identity, where nature and nurture both have influenced the development, may not have changed and eventually will take charge again, the disease comes back.

The processes that are at play here have to do with epigenomic influences and genes related to aging like the DAF-2 and DAF-16⁴ and the sirtuins, mTOR, insulin/IGF-1 pathway⁵, but mostly the degradation of the telomeres (end-codes of DNA), which the VA research has shown is increased in PTSD victims. This means gradual accumulation of DNA damage and epigenetic changes in the methylation patterns that affect correct gene expression and this then leads to altered cell function and eventually disease and premature death. As mentioned before, recent research of Maastricht University (de Nijs, 2017) also showed microRNA changes because of PTSD.

This problem is very fundamental, and modern DNA and RNA degradation research increasingly shows that these processes are very influential, can indicate estimated life-expectancy, the effects of traumatic incidents like birth or what was experienced in the womb and maybe distinguish between the effects of fixing or healing; this may become a central issue in the medical world. What are the practical, ethical and eventually legal consequences? What are the consequences of for instance a caesarean birth, organ transplants or even blood transfusion. Can we really heal or is all therapy nothing but fixing? In the previous paragraph this was already mentioned, but it becomes a real issue if a 'hard' difference could be established, like in the methylation patterns and degradation levels of our DNA.

Think about these ethical complications. Suppose we can relate the outcome of a certain therapy to life-expectancy data, then how and who could make a rational and responsible choice? Doctors already face the dilemma that certain therapies like for terminal patients can be translated in longer life expectancy, but with sometimes decreased quality of life and at a cost that eventually limits the care for others. They tend to present these choices now to the patient, as if these have any insight in what for instance chemo-therapy, radiation or organ removal would entail

4 Adams, J. Genetic Control of Aging and Life Span. Nature Education (2008)

5 National Institute on Aging: www.nia.nih.gov

(and there may be financial, insurance coverage or other interests at stake too). Ethical dilemmas abound, and with more insight in the causality or even retro-causality (as we see in imminity life will fight back) and deliberate manipulation of certain processes, also in how we deal with trauma and trauma processing, these will become more important. This goes beyond the effects of genetic manipulation, it is now clear that things like childbirth, operations and even initiations have an effect on how we epigenetically express our genetic imprint; how this influences our identity formation and development. With the increased understanding of these deeper mechanisms of life, the microscopic processes, which have such an effect on how and how long we live, still nthe age old questions, like why we are what we are, have not found better answers.

There is of course real value in symptomatic therapy, it can improve the quality of life, help to re-integrate with family and society, help people to normalize their situation. We all need to align us with what the world requires, in order to live with others. This ‘fixing’ of the symptoms, offering a way to cope with them, is, however, not curing or healing the root causes.

In the identity model used here, where a distinction is made between the various self images (what we think we are, our subjective identities, while our complete identities are when we include the sub- and unconscious aspects) we can separate between fixing and healing. Fixing is than achieving changes in our assumed self (ego), which of course reflect on what we show the world (the perceived personality by others). Healing is then making changes in the core self and identities, down to the level of fixing DNA degradation.

When we expand this model to include more substitute identities the model gets more complicated, there are potential conflicts between the various identities (egos) and again there is the possibility of just fixing a specific conflict or healing it, by reintegrating the substitute identity (thereby removing it).

Context, data availability, the components of therapy

There can be no doubt that a better understanding of PTSD is needed. PTSD is now recognized as a fairly common problem, affecting not only many people of all walks of life, but also having an enormous economic, socio-psychological and political impact. Alot of work is done to inves-

tigate it, develop and promote evidence based treatments and look for new ways to address it (like with EMDR, the recent psychedelics research, virtual reality therapy or administering oxytocine).

There is, however, little research into the fundamental questions discussed before, most research is concerned with proving specific approaches to be effective or not, using samples of cases. The problem is that the patient-specific data from those samples and case-histories in the medical world seldom go beyond the superficial, not separated according to blood type, personality, history, DNA mapping.

Sometimes more or less accidentally important resonances come to the light, like in the case of shortened life-expectancy we already mentioned before, based on DNA degradation in PTSD sufferers (the VA⁶ came out with this pointing at pretty solid research). But imagine that veterans would take the government to court because they want to be compensated for the missing years of their lives?

For the moment, limited research projects with limited data are what is available, and apart from proving efficacy of certain approaches they may and hopefully can help to come up with explanatory models.

So what can help to understand therapy, what are there relevant models?

Cultural bias

E. Fuller Torrey⁷ looked at four basic components that make therapy successful across cultures. He compared indigenous practices with the rather “dry” and ethnocentric Western approach that was more or less seen (in 1986) as universal and pointed at ritual similarities. Torrey’s four ‘transcultural’ therapy components are:

- a shared worldview,
- the personal qualities of the therapist,
- the expectations of the client, and
- an emerging sense of mastery.

So the client and therapist agree on the problem to be addressed; the client believes that the therapy will work; the relationship between therapist and client is conducive to making the therapy work; and finally the

6 VA PTSD newsletters

7 Fuller Torrey, E. *Witchdoctors and Psychiatrists: The Common Roots of Psychotherapy*. (1986)

therapy itself is to be seen as effective, the client identifies with it and obtains a sense of mastery.

There is a catch. In many cases, only one of those four factors is necessary for the therapy to be effective. The client-therapist relationship, for example, can make even a flawed therapy work. Sometimes it is the final factor. An anti-biotic might restore a client to health, even if she does not agree with the diagnosis, even though she hates the therapist, and even though she has no confidence that the antibiotic will be helpful. Placebo and expectancy run through all four of these factors.

Torrey's views are widely appreciated, but his worldview notion is somewhat contested. According to Carl Rogers (1987) the worldview is not so important, what matters as the crux of successful therapies are the therapeutic relationship and the client's resources. To cater for the differences in background and the cultural diversity, however, seems to be accepted more and more as a factor in the success of PTSD therapy.

Placebo, suggestion and expectancy

The imagination plays a major role in how we see the past but in therapy, also how we see the future and the outcome of what will happen. This factor is more and more recognized as important for the outcome of the whole therapeutic and healing process. The notion of the self-fulfilling prophecy and the placebo effect have been used and recognized in psychotherapy for quite some time, it is even acknowledged that the placebo effect works even when patients know they are receiving a placebo. Torrey points at the importance of arousal, of using ritual techniques and what some would call 'magic' to prepare the client, raising expectations. There are states of consciousness, where we are more open to suggestions. These states can be reached by various means, like (psychoactive) drugs, hypnosis, holotropic breath work, regression therapy and creating an atmosphere of trust.

General approach in PTSD therapy

There are several clinical practice guidelines offering recommendations for the treatment of PTSD, for example the VA/DoD PTSD Clinical Practice Guideline (2010). The guidelines unanimously recommend Cognitive Behavioral Therapies (CBT), which may include Prolonged Exposure (PE) and Cognitive Processing Therapy (CPT), as the most effective treatment for PTSD, and the majority of guidelines recommend Eye Movement Desensitization and Reprocessing (EMDR) as well. This is usually, but not formally, accompanied by additional approaches like

rescripting, relaxation, and adequate information about what PTSD is and does.

Medication is an option, but as even the VA explains; patients with mild personality disorders may be treated effectively, but medications alone are unlikely to address all of the needs for those with more complex trauma histories.

The current evidence base for PTSD psycho-pharmacology is strongest for the antidepressants like selective serotonin reuptake inhibitors (SSRIs), Tricyclic Antidepressants (TCA) or Monoamine Oxidase Inhibitors (MAOI), but only sertraline (Zoloft) and paroxetine (Paxil) are approved by the Food and Drug Administration (FDA) for PTSD. Prazosin is an alpha adrenergic receptor antagonist (traditionally used as an antihypertensive agent). It acts to reduce the level of activating neurochemicals in the brain and, via this action, is supposed to damp down neurological pathways, which are over-stimulated in people with PTSD.

The authorities that deal with PTSD mostly, like the Veterans Administration and the NIMH in the US, do a good job in dissemination information, setting up treatment programs, stimulating research, but also complain about the (lack of) adoption of evidence-based treatments (EBTs) into routine practice.

Dissemination of EBTs or practice guidelines through traditional educational activities (e.g., formal continuing education programs) has, they regret, limited impact on day-to-day clinical practice, this is what comes out in many of their communications.

There is a clear need for more therapists to deal with PTSD, the VA is desperate to enlarge the pool of therapists who can work with soldiers and veterans. One of the problems is that PTSD patients are not very consistent in the reactions, they can become violent or just difficult, and many therapists don't want to deal with that. These are usually not fragile seniors, but hefty blokes that are hard to contain when they get out of line.

CBT: Cognitive Behavioral Therapy

Cognitive Therapy (CT), or Cognitive Behavior Therapy (CBT) was pioneered by Aaron T. Beck⁸ in the 1960s but emerged in stages from work by Eysenk, Wolpe, and Skinner and more recently by Ellis. It addresses the (often irrational) thoughts and associations related to an incident. Steven Hayes developed it further in ACT (acceptance and commitment therapy).

Beck found that depressed patients experienced more or less automatic streams of negative thoughts that seemed to arise spontaneously. These ‘automatic thoughts’ fell into three categories. The patients had negative ideas about themselves, the world and/or the future. By helping patients identify and evaluate these automatic thoughts, he found patients were able to think more realistically, feel better emotionally and behave more functionally. The changes in underlying beliefs about themselves, their world and other people because of the therapy resulted in long-lasting change.

Cognitive behavior therapy is based on the cognitive model: the way we perceive situations and stimuli influences how we feel emotionally, and what we then think of the situation; in distress this perspective can be inaccurate and unrealistic. This approach, however, kind of ignores the somatoform (in the body) anchoring of experiences and how these influence behavior and symptoms in an often unconscious, and not cognitive way.

Cognitive behavior therapy helps people identify their distressing thoughts and evaluate how realistic the thoughts are. Then they learn to change their distorted thinking. The emphasis is consistently on solving problems and initiating behavioral changes in an approach optimized for specific disorders and the individual patient, aiming at a sound therapeutic relationship, setting goals, planning treatment, and selecting interventions. An important part of every therapy session is helping patients respond to inaccurate or unhelpful ideas. The basic question to ask when a patient is reporting a distressing situation, emotion, or dysfunctional behavior is: “What is going through your mind right now?” in order to help them gain more adaptive and accurate perspectives, and examine the validity and usefulness of their thoughts. The CBT approach set clear goals and monitors these evaluating clients’ symptoms, measuring

8 Beck, Aaron T. *Depression: Causes and Treatment* 1967. *Cognitive Therapy and the Emotional Disorders* (1976)

the occurrence of specific target behaviors and assessing progress toward specific goals, also using symptom checklists and action plans. An “action plan”, collaboratively designed with their therapist, usually includes reading “therapy notes” of the most important things they learned in session and engaging in specific activities that are linked to the accomplishment of their goals. This means homework for patients to implement solutions to problems or to make changes in their thinking and actions. This process gets clients actively involved in their own treatment; they begin to recognize that the way to get better is to make small changes in how they think and what they do every day.

CBT has been studied and demonstrated to be effective in treating a wide variety of disorders. It is possible to use online support and supervision to complement the treatment, this is called guided internet-based cognitive behavior therapy (ICBT).

Cognitive behavioral treatments typically include a number of components, including psycho-education, anxiety management, exposure, and cognitive restructuring. CBT can thus include:

- Exposure therapy to help people face and control their fear. It gradually exposes them to the trauma they experienced in a safe way. It uses imagining, writing, or visiting the place where the event happened, a modern form is using virtual reality for increased immersion into the situation.
- Cognitive restructuring to help people make sense of the bad memories, change their perspective. Sometimes people remember the event differently than how it happened. They may feel guilt or shame about something that is not their fault.
- Talk therapy, allowing patient to express their feelings, explain to them how trauma processing works, what phases and symptoms to expect, help people identify and deal with guilt, shame, flashback, recurring memories and other feelings, but also tell them about relaxation and anger-control methods, provide tips for lifestyle changes, to improve sleep, change a diet, and exercise habits.

Often the choice for a therapy is more based on the symptoms than on the root causes. This may (temporarily) be an effective way to alleviate the symptoms, like depression, flashbacks, sleeplessness (insomnia), but will not deal with the root cause. The success, just as in general psychotherapy, is often the result of an effective patient-therapist relation than of the methodology used.

Exposure therapies

The military (VA) recommends **Prolonged Exposure** therapy to have the individual talk through the traumatic experiences over and over until the event is no longer activating. There are many ways to go back to the traumatic experience, these days even virtual reality can be used, and body-mind techniques, hypnosis, breath-work, etc. It doesn't really matter if the memory is about what really happened, or a projection, it is the subjective experience that matters. Trauma narratives can be done verbally, or with images or other forms of art, the underlying personal mythology and how it is damaged may then show up. Also, Cognitive Trauma Processing can sometimes include a trauma narrative. An evidence-based practice for children and adolescents is **Trauma Focussed Cognitive Behavioral Therapy**, which uses a trauma narrative to expose the individual to their trauma, in order to slowly make it part of one's 'normal' history.

The exposure, bringing back the memories and the emotions associated with them can be done all at once, called "flooding," or gradually to build up tolerance, called "desensitization".

These exposure therapies, reliving the memories, are mostly recommended for individuals who have experienced a single incident, or perhaps experienced several incidents but don't have any other mental health complications. Not in all cases exposure therapy works well, sometimes it aggravates the symptoms.

For situations, where there is no accessible material as the memories are deeply repressed, and this might be the case when the experience led to the formation of a substitute identity, more forceful approaches might be necessary. Using psychedlics or regression hypnotherapy may help to access those deeper layers. Often a specific trauma situation recurs (is triggered) and those later incidents can be accessed, then a "peeling off" going backward may work, trying to find the root experience. These may even be a birth trauma or what the foetus experienced in the womb.

Risk of exposure, trauma reliving

One of the issues concerning trauma therapy is whether it is necessary to go back to the traumatizing event, by whatever technique. Some alternative therapeutic approaches, like NLP (Neuro-linguistic programming) and PSYCH-K, advise against exposure therapy. Can't we deal with the symptoms alone, without having to bring back those awful moments, opening the subconscious memories? Some therapy approaches claim

this is not only possible, but it's a better way to deal with PTSD. The idea is that what we created (as negative emotions) we can also dis-create and there is no need for what is called 'Self-Disclosure', going back to the old traumatic experiences.

This is of course a strictly symptomatic approach, and the proponents claim that for some people the other approach, exposure therapy, talking about our problems, reliving them again and again can often make things worse and has no therapeutic value.

There is a tendency to try whatever, but this is not always without danger. The notion, that not all therapy is beneficial is expressed well by Bessel van der Kolk⁹ concerning exposure:

When people develop PTSD, the replaying of the trauma leads to sensitization: With every replay of the trauma there is an increasing level of distress. In those individuals, the traumatic event, which started out as a social and interpersonal process, develops secondary biological consequences that are hard to reverse once they become entrenched.

This may not be valid for all people, there is much variation in how this sensitization happens and is stored in mind and body, but the warning is important. This also has to do with the difference between fixing and healing, or symptomatic versus fundamental cures. Fixing may make one's life easier, but the deeper damage may show up at a later stage.

EMDR, a polarity tool

Eye Movement Desensitization Reprocessing therapy (EMDR) is a popular and effective tool (it comes from a much wider tool set in NLP) and as an intervention that allows an individual to reprocess memories and events, that might be a key to understanding PTSD as a mind-body dissociation. It is developed by Francine Shapiro, is approved (in DoD/VA guidelines and by the US Substance Abuse and Mental Health Services Administration (SAMHSA)) and can be combined with cognitive (usually verbal) therapy.

It is a controversial because the mechanisms addressed are not well understood but brings usually good results. Reprocessing means accessing the relevant memory (in the specific substitute identity/trauma state associated with it) and uses dual awareness with bilateral stimulation

9 Bessel van der Kolk; *The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma*, 2014 also Robert Scaer: *The Body Bears the Burden*, quoting Bessel van Der Kolk (2014)

(eye/ear) to kind of shock and rock the memory. In this therapy patients recall and describe their trauma memories, while the therapist makes movements with their finger or an object in front of the patients face, asking the patient to hold their head still, but following the movement with their eyes (and synchronous with a sound signal). By recalling images, thoughts, emotions and body sensations one is suggested and even seduced to go back to the traumatic moments and to move through the experiences that aren't resolved. It creates like an overload, the polarity switching between hemispheres (left/right) is too much for the mind to handle; this affects the memory impact, so desensitization can be the result. The going back to the trauma state, feeling the impact is an essential part of EMDR, in the context of substitute identity formation this means switching to an identity state related to the trauma. This is helping to reprogram and desensitize the traumatic nature of these memories. The technique then 'shakes loose' the connection, is one explanation.

It looks like a kind of exposure therapy, going back to the memories and the trauma related identity state, but the EMDR techniques are then used to integrate, at a deeper 'embodied' cognitive level. The non-organized memories, assumed to cause the symptoms, are transformed and stored in the more organized way like normal memories. There are phases of treatment in EMDR, starting with skills-building and resourcing in preparation for the processing phases with bilateral stimulation. This approach incorporates imaginal and thus some bodily exposure to traumatic memories, and this might be why the therapy works. EMDR is recommended for individuals who have developmental or complex trauma, but also has evidence-based protocols for single incident trauma. A criticism of EMDR, similar to other NLP approaches, is that it is very effective for symptomatic treatment, but not always healing at the deeper levels. It shakes up or even distorts the identity related to the trauma.

Using EMDR in connection with other approaches, like psychedelics, may be dangerous. EMDR seems to shake up specific identity states, and when those are the ones causing PTSD that may be beneficial, but in a psychedelic state all identities are kind of open to manipulation, and using EMDR might shake up all of them, with negative effects. One could even consider the possibility, that EMDR-like situations or visual effects in the trip are the cause of lasting 'bad trip' effects that are observed in some people.

EMDR is already more body oriented than mere talk therapy and assumes some kind of interaction between information processing and storage and perception. There are other similar therapy approaches (like EFT, Emotional Freedom Techniques) and PSYCH-K honoring how our body stores and ‘memorizes’ trauma.

The body and notably the polarity angle in these approaches obviously is what Eastern traditions like ayurveda have used for a long time, but wasn’t taken serious by the Western medical establishment. Now, in a way through the back door, ,

Limited VA approach

Acknowledging the good work and intentions of the VA and their support for new and alternative therapies, their approach is criticized as being too limited and strict. Even as their recommended therapies are effective, they are limited, don’t work for everybody, finding the right therapy is often guesswork, trial and error. For instance group treatment for PTSD is not recognized as evidence-based by the VA. A more open approach is suggested. Stan Krippner for instance remarked :

”Talk Therapy is fine but needs to be supplemented by either hypnosis/dreamwork/ psychedelics/exercise/diet/yoga/or group work and I consider group work extremely important.”

He points out, based on his experience with both shamanism and psychotherapy, that we have to look at a broader range than just the approved approaches. When we want to achieve change or healing, shamans and psychotherapists alike can evoke this, if one or more of the following conditions is met:

- the therapy/medicine/drug empowers or affects the patient in some way
- the patient has hope/expectations/belief that the treatment will work
- the relationship between therapist and patient evokes a mutually agreed upon diagnosis
- the therapist has the personal qualities to evoke self-healing on the part of the patient.

Any one of the above can evoke healing.

Group therapy and support structures

As mentioned before, the social identity and group mind effects on how a trauma situation is experienced and how it may be processed may be more important than is commonly recognized, even as it is criticised for

failure to provide evidence of successes that can stand up to peer-reviewable scrutiny in the medical research community.

Group training and that comes close to group therapy is probably as old as humanity, just think about schooling and the need to have effective teams when hunting and in war. Ritual, a fundamental part of culture, is mostly a group experience and aiming at improving situations, healing, and thus therapeutic. Even as just sitting in a circle and sharing experiences or insights may look like a simple approach, the ritual aspects and creating of a safe and even sacred circle, a set and setting that helps people to enter a group mind (identity) space has very deep and old roots in our collective unconscious.

Ritual offers participants access to their deeper psychological, social but also spiritual issues, where for instance aspects of their substitute identities may surface, bringing awareness and potential healing. The mirror mechanisms in a (safe) group, where projection of one's own problems and inclination in others can bring realization and introspection, may resemble individual talk therapy, but the absence of hierarchical or transference processes and being with peers (socially, as victims, patients, without rank) can be very beneficial. Group therapy in institutional settings for psychiatric problems and in the pop-psychology and self-discovery world is commonplace.

Many veterans do join groups or set up informal circles and benefit from this. They do have group meetings and appreciate what it brings to them, there are many examples of such efforts like Seeking Safety (SS). The experience of veteran groups, but also the much wider experience in addiction therapy (where trauma processing is often a factor too) support the notion that participating in groups can be beneficial. Not necessarily as a therapeutic tool, but as a way to provide a social *umfeld*, meaning, structure and discipline. Support groups play a significant role in many agencies and institutions that serve trauma survivors.

Sleep and nightmare therapy

Among the most common symptoms of PTSD are sleep problems; sleeplessness, nightmares, with resulting deterioration of physical wellness, the tendency to use escapes like alcohol or drugs. While sleep problems are symptoms of PTSD, they tend to become independent problems over time, warranting sleep-focused assessment and treatment.

If the person is unable to adequately process the memories of the traumatic experience and repressed them, it later creates a log jam in the

REM processing of day to day emotional memories (where emotional memories are replayed in metaphorical dream sequences and so have their emotional content neutralized so that they can be stored as narrative memories) and this causes a build-up of unresolved emotional memories stored in the hippocampus. Over a period of weeks the pressure to process builds, and if the trauma is not cleared the individual will start to show the symptoms of PTSD.

The preferred treatment approach for insomnia is cognitive behavioral treatment for insomnia (CBT-I), a series of strategies focused on stimulus control, sleep restriction, de-arousal techniques, sleep hygiene, and cognitive restructuring. The NLP Rewind method, which can be useful in treating trauma and PTSD, mimics the workings of REM. Once the traumatic memory is processed the hippocampus can go back to processing the day to day unresolved emotional memories in REM as normal and the individual can regain emotional balance and normal Pre-frontal Cortex functioning. The hippocampus is also key in the processing of all memory; people who suffer from trauma have a hippocampus filled with backed up emotionally unresolved memories so are less capable of processing new memory.

Planned dream interventions, imagery rehearsal therapy

It is estimated that at least 90% of individuals who have a diagnosis of PTSD report nightmares related to the traumatic experience, with a frequency that can be up to 6 nights a week, and may continue for decades. Sleep laboratory studies of individuals with PTSD consistently show fragmented but increased Rapid Eye Movement (REM) sleep. A psychotherapeutic (CBT) approach to treating nightmares is imagery rehearsal therapy (IR), which is also referred to as nightmare re-scripting because it entails choosing a recurrent nightmare and finding a way to change the content in a way that makes it less intense or distressing. The differences in sleep amongst those with PTSD related nightmares (compared with those who do not have PTSD) are tangible, they report decreased total sleep time, increased number and duration of nocturnal awakenings, decreased slow wave sleep and increased periodic leg movements. Fragmented REM sleep could in fact be the core of PTSD. Learning to stop nightmares using reframing or rerouting the dream content has been reported as an effective way to deal with the negative impact. The approach, also termed Planned Dream Intervention by Dr.

Beverly Dexter¹⁰ and successfully used with larger groups of British war veterans will help individuals who do not remember dream content, but wake up often, despite otherwise good health. The core concept of this approach is that dream content can be influenced by conscious thoughts and imagery. If the individual learns Planned Dream Intervention they usually experience an immediate release from the nightmares and start sleeping peacefully through the night.

The concept of rehearsing a desired ending for a nightmare is mentioned in works by Marks and Barry Krakow who have developed this approach further into Image(ry) Rehearsal Therapy with clinical trials.

Body work, yoga, bio-energetics, breathwork

Stress can develop in a the mind, but the body is part of the process. Understanding the body-mind or even better the body-emotion-mind relation is essential in treating PTSD. Some would add spirit to this triad. Identity involves all realms, the ways we act, feel and think (and pray) are based on who we are, in a total perspective. In this broad perspective, our identity is not the result of the biological situation, it is the force that shapes our brains (and the way we use them), emotions and body. Our state of being and eventually our traits and disorders are thus, in this perspective, not the result of chance and biochemical processes, but originate in the identity and identity conflicts. Our identity, as expressed in our body, our consciousness and our emotions then shape our lives, not so much the rational mind. We mostly make decisions based on emotions and intuition, as people like Nobelist Daniel Kahneman made clear.

Those emotions and the memories of them, especially the ones related to trauma, are stored, our body is a repository of a different kind of memories. Body focus, somatic interaction (apart from sedating pills), is mostly missing in the academic approaches concerning PTSD therapy, where cognitive therapy is the dominant approach, even as the VA accepts EMDR, much more of a body mind technique, as an effective approach. But if we see, as is suggested before, the symptoms of PTSD as thwarted (self-directed and self-damaging) expressions of the normal reactions to the original trauma situation, those reactions would in many cases be physical. Expressing anger, fight or flight, the normal sympathetic reactions that were impossible at the time of the trauma, are physi-

10 Dexter, Beverly, *No More Nigmares: How to Use Planned Dream Intervention to End Nightmares* (2008)

cal and the parasympathetic effects on digestion and sleep can't be ignored either.

The body-mind complex and how they interact has been studied and therapy models have been developed (somewhat less prominent than Freud's and Jung's cognitive approach) by people like Reich, Alexander Lowen, Peter Levine and Jack Painter, among many others. Some inspiration comes from Eastern sources, other approaches were more or less independently developed.

Outside of academia and the official medical world there has been and is a large following concerning body oriented or body-mind oriented approaches. Many of them, even as they are seen as alternative, have been tried and are deemed effective by those involved for PTSD. We can mention meditation and body concentration, like yoga, bio-energetics, body-work, massage therapy, martial arts training, physical exercises of all kinds, chakra healing; the number of body oriented therapy and health methods is amazing. The beneficial effect of concentrating on bodily functions and positions like in yoga has been known for thousands of years. There are many techniques to meditate, to calm the mind (like mindfulness training) and therefore the body. Many of those are ways to dissociate in a controlled way, stepping away from the stress and pressure of daily life. Mind-body dissociation is at the root of many disorders. To restore a normal mind-body (association) interaction is important, and many approaches emphasize this "*mens sana in corpore sano*".

Controlling the breathing can bring a sense of calm, while taking a few deep breaths can lower rage. Those effects and the calming results of meditation, mindfulness etc. have been shown in EEG-scans and are generally accepted as beneficial to a healthy and balanced state of mind, something PTSD therapy also tries to achieve. The effect of breath control is, thanks to modern scanning and technology, a phenomenon that can be related to specific brain regions and even specific brain cells.

Breathwork, especially as used in regression and therapy as in holotropic breath-work, can also be part of an integrative PTSD therapy approach and as a relaxation tool to fight panic attacks.

Because the therapies recommended by the VA are not available to everyone, because of affordability or because of disbelief in their effectiveness, many therapies from the general repertoire of counseling, transpersonal, artistic creativity stimulation, psychodrama, bodywork, mind-body therapy, mind-body dissociation therapy, chakra healing.

systemic (family-)constellations are tried and are often successful), much of course depending on the therapist. Progressive Muscle Relaxation, Storytelling, working with animals (notably horses), there is little in the arsenal of modern psychology that has not been tried and might work, but most lack the research that would make it acceptable as evidence based method.

The notion that trauma processing is not only a cognitive, but also a somatic process is well recognized and researched, but somatic healing of trauma is less accepted. The effects of the many beneficial case-histories, where new body experiences, retuning the body by physical exercises, etc. etc. are, however, not showing up in the recommendations of the 'regular' medicinal world or seen as proven effective by the authorities or insurance companies. Yet most PTSD victims will, at some time, combine a kind of body oriented therapy or just physical exercise with other therapies and feel the beneficial result of it.

Physical environment, diet, exercise

Our identity adapts to the environment and as healing in essence means that our original genetic and epigenetic identity is restored, environmental factor play a role in therapy. This is a complex field, for to what extent does our living situation, our work, our clothing, sports, food, communication possibilities, exposure to environmental hazards etc. play a role in the healing process? It's obvious that substandard conditions should be avoided, living in slums, eating bad, being cold, dirty etc. But to what extent is healing affected by special conditions, a nice environment, absence of stress etc. etc.? Or just the opposite, exposure to extreme conditions like deep freezing, whole body cryotherapy? This is not deeply researched, but we all have some idea of what a beneficial and healthy situation should be.

Classic psychotherapy

There are of course many therapy forms that can be used to help with PTSD. From the Freudian and Jungian psychoanalytic approach with a myriad of sub-schools to the Rodgerian client-centered therapy to the Gestalt approach of Perls and Assagioli's psychosynthesis. There are many adaptations and improvements, all kind of psychotherapeutic schools have developed and many therapist combine what they feel the most appropriate for their client in an eclectic approach.

Alternative approaches, NLP

There are and always have been people willing to try something new, different, something encountered by accident or borrowed from other cultures. Healing by drumming, dancing, bathing, why not try something different from drugs and talk-therapy? When observed in indigenous or shamanic cultures these healing practices were often 'scientifically' deemed primitive, irrespective of the effectiveness or results.

Often these now rediscovered approaches are initially seen as quasi-science, unproven and even forbidden by the regular medical world, but find their way anyway like homeopathy, radionics, kinesiology, music therapy, even hypnosis and now, after a long time banishment, psychedelic therapy.

Neuro Linguistic Programming is an approach created or better discovered in the late 70s by Richard Bandler and John Grinder¹¹. Their position was extremely pragmatic, they found out some techniques worked well in releasing hidden problems and getting rid of symptoms. They used observations of what famous therapists like Milton H. Erickson and Virginia Satir actually did, they modeled it, like turning the interventions into a kind of expert-systems. The basis of NLP is the subjective experience, it studies the structure of those experiences to see if certain programs can be identified as effective in rewiring or reprogramming the brain (hence neuro) and can be activated by certain words (linguistic). They found out, that indeed there were effective ways to reprogram the subjective interpretations of the reality, and these could be anchored to achieve behavioral changes. They were, in a way, using the plasticity of the brain to remove or change certain circuits, but it is not totally clear how this actually works. NLP and EMDR is one of the more successful tools, is an approach with often quick and effective results, there is a large following, many therapists use it, but it is not broadly accepted as evidence based. Criticisms are that it is basically symptomatic treatment only, and it seems that only a small portion of the clients is indeed fundamentally healed, the majority however got rid of the symptoms and in PTSD this can be very helpful to regain a normal life.

Psychedelic therapy

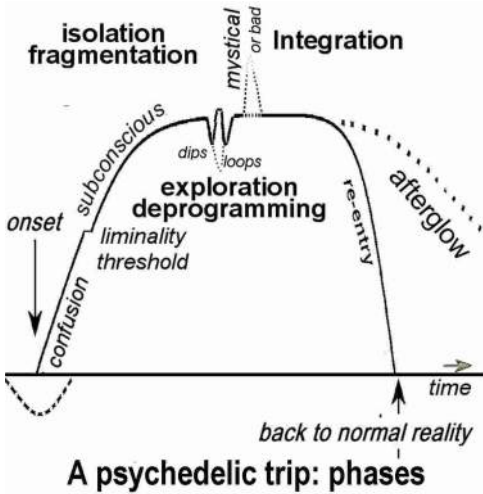
Psychedelics as the new wave in PTSD therapy receives a lot of attention these days, with legal experiments with LSD, psilocybin, MDMA

11 Richard Bandler and John Grinder; *Frogs into Princes*. 1979

and less legal in the popular underground ayahuasca and iboga movement. A true revival, using once-forbidden psychoactive substances to bring back hidden unconscious memories and integrate the experiences of the past, but also hoping there are long lasting positive effects at the epi-genetic level.

The psychedelic therapy that briefly became popular in the sixties, became illegal and went underground, is rebounding. Maybe out of despair that conventional approaches didn't work very well, the government in the USA and elsewhere has allowed more experiments. These experiments more or less replicate what insiders like Alexander Shulgin found out decades before, but have more rigid scientific and procedural meat now. The problem is that the focus is narrowed down to a limited number of medical problems, like PTSD and aims at legalization of supervised psychedelic psychotherapy for those. The medical establishment, like John Hopkins Hospital and in the background initiatives like MAPS (as budding Big Pharma monopoly for MDMA) obviously sees interesting possibilities to establish expensive

diagnose/treatment protocols. A new breed of psychedelic therapists is waiting in the wings, awaiting licensing and good fees! This limits the wider research into the effects of psychedelics, which might be more promising in combination with other kinds of therapies than the ones currently under consideration, like with VR, massage, body work, expression therapy, polarity therapy or using neurotransmitter substances and adrenal hormones like for



instance cortisol.

It also doesn't take into account what psychedelics may do to our creativity and sense of privacy, as it allows us to enlarge our inner world, explore new perspectives and frees us from cultural constraints. Our inner autonomy, our freedom to face whatever, is definitely enlarged when taking these substances. Some claim this enlarges their creativity and

learning potential (allowing us to make mistakes), so limited by the stress and lack of privacy of modern life.

Chemically, individuals with PTSD show decreased levels of paroxetine binding, suggesting that levels of the serotonin (5-HT) transporter (5-HTT) are attenuated in PTSD and involved in the manifestation of arousal and avoidance symptoms¹². Psychedelics affect the 5-HT receptor.

The potential of psychedelics (especially hallucinogens) in dealing with identity conflicts like PTSD is that the identities (ego states) dissolve, cognitive unity and even the sense of cognitive continuity (temporal integration) diminishes or disappears, the glue that holds our self together evaporates. One can get in touch with hidden and repressed parts of the psyche, like trauma memories, that are normally contained in the sub-conscious parts of a specific identity.

Psychedelics profoundly alter cognitive unity, our sense of self. One could say the identity complex breaks down, this is also described as going back to the core identity, as the place where the ego (assumed self) disappears. The separation between the self and the world dissolves; people begin to feel at one with everything. Perceptions from the inside become hard to disentangle from those from the outside, inner and outer worlds mix, time becomes fluid, each frame of an experience slows down or accelerates, the now expands, we can experience memories as happening right now. Global brain activity, especially the visual, is profoundly affected and sensorimotor control may get out of sync.

There has been serious research by people like Alexander Shulgin and people around him. After WW-2 psychiatrists dealing with post-concentration camp syndrome like the Dutch psychiatrist Jan Bastiaans worked with LSD to help people process their traumatic experiences.¹³

More recently MDMA (ecstasy) and psilocybin experiments yield promising results as a tool to assist psychotherapy for the treatment of posttraumatic stress disorder (PTSD). Organizations like MAPS (Multidisciplinary Association for Psychedelic Studies) in the USA and

12 Michopoulos, Vasiliki, Davin Norrholm, Seth and Jovanovic, Tanja; Diagnostic Biomarkers for PTSD; Promising Horizons from Translational Neuroscience Research, Biol Psychiatry. (sept 2015)

13 Bulletin of the Multidisciplinary Association for Psychedelic Studies, MAPS - Volume 9 Number 2 Summer 1999 - pp. 3-9: The Bastiaans Method of Drug-Assisted Therapy (1999)

The Beckley Foundation in the UK are actively promoting and sponsoring such research. Preliminary studies with veterans have confirmed that MDMA in conjunction with psychotherapy can help people to alleviate their PTSD symptoms and even overcome PTSD. A year after a trial therapy was completed, two-thirds of the more than 100 participants, of which around a third were veterans, were found not to meet the criteria for PTSD anymore. MDMA has been approved by the Food and Drug Administration for use in large-scale (level 3) clinical trials¹⁴. Institutes like the John Hopkins Hospital (in cooperation with MAPS) are now expanding from medium sized experiments to larger groups, including double blinds controls, to establish evidence based positive results. Psilocybin, MDMA are test substances, a marihuana trial was abandoned because of availability of 'good' pot supply issues with the FDA and DEA.

The hope is that specific diagnosis/treatment protocols will lead to acceptance of psychedelic therapy as a 'normal' choice in a few years. The results so far are not very different from what people like Naranjo, Shulgin, Leo Zeff (the secret chief) and many others have described, based on their experiments with MDA and MDMA in the 60's and 70's, but these new experiments are set up more scientifically rigid and under DEA control.

There is and has been much going on below the radar in this field, there is a whole underground movement of people trying things out. People with PTSD are experimenting themselves or with the help of underground therapists or shamans, travel to countries like Mexico, Brazil, Peru or Equator to participate in psychedelic sessions and rituals, notably with Ayahuasca or go to Equatorial Africa (Gabon) for Iboga tabernanthe rituals. There are many, many herbs and plants with psycho-active qualities, nearly every culture has found their local alternative, their teacher plants and there is even a psychoactive toad, Bufo alvarius.

Studies at Yale, and published in the journal Science, have confirmed earlier reports that ketamine (Ketalar) offers remarkable, nearly instantaneous relief for people who suffer from forms of major depression impervious to other treatment methods. Interpreting depression as a hardware problem largely caused by the loss of synaptic connections, the re-

14 <https://maps.org/research/mdma/ptsd/phase3>

searchers argue that ketamine works by encouraging neural growth in brain regions correlated with memory and mood.

The psychedelic approach (but there are other therapies that achieve this) can be seen as a pressure-cooker accelerating the diagnostic and therapeutic process, bringing to the surface the repressed and hidden memories (also body memories), reliving them and changing the perspective, which can lead to integration and mitigation or even disappearance of symptoms. The most general outcome of a psychedelic trip is enhanced awareness of self and nature, an increased tolerance for being different (in self or others), and often an increased level of spirituality.

In a good and safe ‘set and setting’, with a proper purpose and some preparation to create a positive environment the risks of psychedelic sessions are minimal, but not negligible. A ritual approach with a clear ‘agenda’ helps to limit the risks. For PTSD cases psychedelic therapy is more risky, hidden (pre-existing) pathological mental problems like psychosis may become manifest. Pre-selection and vetting of patients is therefore necessary and a setting is necessary where unexpected outbreaks of aggression, suicidal tendencies can be adequately dealt with. One of the insights from the 60’s in how psychedelic experiences develop might help to recognize levels in not only psychedelic therapy, but also in other forms of dealing with hidden memories of trauma. Masters and Houston¹⁵ (in 1966) recognized 4 levels of psychedelic experience:

- enhanced sensory awareness, feeling the body, hallucinations
- recollective/analytic, becoming aware of mental and emotional processes, recognizing self-masks and behavioral patterns
- symbolic level; aware of primal, archetypal and recurring themes in human experience, accepting life and experience as a lesson.
- the integral/mystical level, feeling one with all.

Not everybody will reach all these levels. Transpersonal psychiatrist and holotropic breath-work initiator Stanislav Grof also recognized these 4 levels, but labeled the third the “perinatal” and the fourth the “transpersonal”.

15 Masters, Robert and Houston, Jean: *The Varieties of Psychedelic Experience: The Classic Guide to the Effects of LSD on the Human Psyche* (1966/1973)

When we look at what the various therapeutic models try to achieve, these levels can also be identified. For instance prolonged exposure obviously falls in the sensory awareness level, the patient becomes aware of his fears and bodily reactions, and learns to deal with it, in a desensitizing process.

Deep level healing, and this is where psychedelic therapy is so promising, is when the patient or tripper start to see, that whatever happens to them is part of a lifelong process of growth and learning. This fundamentally changes the perspective, the traumatic experience is seen as a necessary step in a process of self-realization.

Combination of psychedelics with modern immersive technologies, like virtual reality, are potentially offering new avenues in dealing with trauma and identity conflict disorders.

One of the approaches in psychedelic usage, often the preferred way in older cultures using them, is the group ritual. The underground psychedelic movement, working with iboga, ayahuasca, yopo and many more plant based substances (and even toads like *Bufo alvarius*, some fish and fungi) has explored this group-approach much more than the scientific world in their more limited individual symptomatic quest. Substance-assisted group therapy might be very effective and efficient, as many reports from participants suggest.

Implants, electrostimulation, chips, lobotomy 2.0

These days we can use all kind of technologies to temporarily block certain nervous path. Not the rather drastic way lobotomy was used, but by using stimulation, medication or anesthetics for certain parts of the brain or the nervous system. The U.S. Army is researching an anesthetic injection (with Naropin) called a stellate ganglion block, that could relieve symptoms of post-traumatic stress disorder. There are a number of therapies using stimulation of the skull with electric pulsing, infrared light and other means, trying to activate specific regions. rTMS (repetitive Transcranial magnetic stimulation) is a noninvasive procedure that uses magnetic fields (repetitive pulsing) to stimulate nerve cells in relative small areas of the brain involved in mood control and depression. Used when other methods fail.

In the past, severe pathological symptoms in psychiatric patients were sometimes solved with surgical methods like lobotomy (of the left/right connection) or with electroshock, which is still used in some cases and in moderate (and anaesthetized) forms as electro-convulsive therapy

(ECT). For PTSD there are experiments with electro-stimulation, not only on the surface, but with inserted electrodes (inserted by way of stents so no need to open the skull) touching deeper regions of the brain, to anaesthetize or stimulate. The DARPA SUBNETS program (The program, called Systems-Based Neurotechnology for Emerging Therapies (SUBNETS), goes a step further and inserts chips in certain locations to monitor and eventually influence brain operation, down to the neuron level. It means implanting electrodes in different regions of the brain along with a tiny chip placed between the brain and the skull, which monitors electrical signals in the brain and send data wirelessly back and could be used to trigger electrical impulses in order to relieve symptoms. This “trans-diagnostic” approach tries to isolate elements that are common to psychiatric and neurologic diseases.

Virtual reality therapy

One of the more recent types of therapy is virtual reality. It involves creating immersive situations, mostly of a visual kind, with goggles or headsets but also using controls and biofeedback to enhance the feeling of being in a different environment (reality). Such a virtual reality offers the potential to create situations, which are not physically dangerous and are experienced as similar to for instance traumatic situations. The technology is increasingly used to help people with for instance phobias but has potential for dealing with traumatized patients.

Although people like Timothy Leary¹⁶ and many of the VR pioneers already in the early 90's pointed at the potential of VR as an electronic (hallucinative) drug and its use in psychotherapy, only recently this application of VR has become fashionable again. Better and cheaper equipment, better monitoring of effects with new bio-sensors opened up a new realm of psychotherapeutic intervention. Games, engaging and immerse environments offer opprtunities to relive specific situation (exposure) or even allow actions that may help to learn to express the thwarted and self-directed emotions in an more healthy way. Combination with medication could help this process, notable psycho-active substances like psychedelics may help to enhance the immerse effect of virtual reality experiences.

16 John Perry Barlow, Luc Sala with Timothy Leary; VR De metafysische kermisattractie (1990) (in Dutch only)

Typology is missing in the research

Treating all PTSD patients the same way is not very effective. Even the VA and the NIMH admits that different therapies work for different people. There seems to be a lack of good tools to help establish effective diagnose-treatment indications related to the personality (identity) type of the patient. Here more appreciation of the various typology tools like MBTI, Big Five, Enneagram, etc. etc. and their limitations and qualities also in relation to the multiple substitute identity model (SIM) could help. In the appendix about typology this approach is detailed and suggestions given on how to optimize the use of such typology.

Summary

Looking at all the variations in therapy a critical stance remains. Deconstruction of the causes and symptoms has led to many angles, many approaches, but then in practice these converge again, therapists combine the various methods in how patients are dealt with, often without specifying them or realizing this, based on experience or intuition. Attention and placebo effects may be what unites all the approaches and makes them more or less effective. PTSD is a very broad label, so far diagnosed with limited means, covering what is quite a range of symptoms and disorders related to traumatic and traumatic experiences and recovery processes; the diagnosis is in need of a re-evaluation. PTSD is linked to negative emotionality, neuroticism, trait hostility/anger and trait anxiety and harm avoidance, but also to novelty-seeking and self-transcendence.

The range and number of people affected, the environments that induce the disorder like terrorism, wars, refugee movements and prisons, and the subsequent impact on society all make further research necessary. An important step could be to see PTSD as an identity disorder, relate the diagnosis to the pre-existing identity structure and typology of the patient and classify the various forms and potential therapies accordingly. Normal or even extended trauma processing is different from PTSD. and needs a different treatment approach.

There is a tendency to look at PTSD in a broader context, acknowledging that trauma processing may actually lead to improvements in one's outlook and in many cases, to facilitating potential posttraumatic growth.

As Jakovljevic¹⁷ et al. argue, in a transdisciplinary multiperspective: *PTSD is a complex highly disabling and suffering disorder where the past is always present in people haunted by the dread frozen in memory of the traumatic events. However, PTSD also represents an opportunity for psychological and spiritual growth due to the human ability to adapt and thrive despite experiencing adversity and tough times.*

The variety of therapeutic approaches, the relative small and often biased samples used to prove effectiveness, the lack of adequate identification of cases and samples concerning identity (typology), the lack of understanding identity formation and substitute identity effects, the mostly symptomatic approach, all in the context of a market and cost driven medical culture does not signal that there will be a simple, effective way to deal with PTSD any time soon.

17 Jakovljevic, M , Brajkoviæ L, Jakšić N; Posttraumatic stress disorders (PTSD) from different perspectives: a transdisciplinary integrative approach. in Psychiatr. Danub. (2012)