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***Re*covery *re*imagined** – an examination of the relationship between trauma, stress, addiction, (and) the body and the role of *embodied Arts* therapies.

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A research report submitted to the Wits School of Arts in partial fulfilment of the for the degree of Masters of Arts by coursework and research report in the field of dramatherapy, in the faculty of Humanities, University of the Witwatersrand, Johannesburg

16 December 2020

Declaration

I declare that this research is my own unaided work. It is submitted for the degree of Master of Arts in Drama Therapy at the university of the Witwatersrand. It has not been submitted before for any other examination at this or any other university.

T. Rall

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Tonia Rall (0209252v)

18/12/2020

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Date

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Abstract

This work explores the nature and healing potential of Embodied Arts therapies such as Drama therapy (DT) and Dance- movement therapy (DMT) with specific reference to recovery, in facilitating mind body integration, managing stress and developing recovery resilience. The assumption is that these approaches offer significant healing possibilities in the context of Addiction Disorders, which is something I explore. It is also an examination of the conceptual basis of addiction as it relates to trauma, stress, pain and the body from a neuro-biological perspective. I include an overview of the etiology of addiction, in terms of it stemming from developmental impairment caused by early childhood trauma or negative experiences, that has an influence on the ability of the adult to manage stress and self-regulate emotions. The premise is that suppressed trauma, stress and pain, when not expressed, stays 'locked in the body' and addictive behaviours are an attempt to escape the discomfort, the (pain) body, 'numb out' or alleviate suffering. Thus, embodied therapeutic practices can offer respite from addiction by facilitating 'release' through expression in the body, amongst many other things.

Furthermore, by returning to the embodied experience in the present moment and applying 'body mindfulness' or 'embodied' (in body) awareness, one can delay the addictive impulse, rather than reaching for the 'quick fix' to alleviate stress and pain. Moreover, I am examining the biological dimensions of the addiction cycle and body stress system (BSS) because at the core of all addictive tendencies is stress and the inability to manage stress in healthy ways due to developmental deficits. This is examined with reference to how embodied therapies can offer alternative methods of stress relief whilst simultaneously serve to integrate Mind and body and perhaps mitigate addictive urges. The key to recovery is through the body.

Keywords: trauma, addiction, substance use, stress, the body, embodied therapies, body mindfulness, Drama Therapy, Dance-movement Therapy, authentic movement.

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'*In every human being there is a special heaven whole and unbroken'*

Paracelsus

Chapter 1: Proposal section

1.1. Introduction to topic and research

> " As we re -experience a *visceral* re-connection with the *needs of our bodies*, there is a brand-new capacity to warmly love the self. We experience a brand-new quality of authenticity in our caring, which redirects our attention to our health, our diets, our energy, our time management. This enhanced care for the Self-arises spontaneously and naturally, not as a response to a should. We are able to experience an immediate and intrinsic pleasure in self-care activities"- Stephen Cope (van der Kolk, 2014, p. 263)

This is a comprehensive research report in the form of an interdisciplinary literature review examining the relationship between trauma, stress and addiction and the impact on the body-mind from a neuroscientific and biological perspective set within the framework of the Bio-Psycho-Social paradigm of addiction. Additionally, a general overview of the therapeutic value of *embodiment* skills and expressive treatment approaches in recovery from addiction with specific reference to Drama Therapy (DT) and Dance and Movement Therapy (DMT).

My assumption is that embodied (body based) therapies can offer compatible adjunctive treatment options in the context of Substance Use Disorders (SUD) and the literature I found also points to that. David Read Johnson, an expert Drama Therapist, asks a pertinent question that offers insight into the nature of addiction and hints at the possibility of recovery; "how many mental health problems, from drug addiction to self-injury, start as attempts to cope with the unbearable *physical pain of our emotions*?" (Johnson, 1990), which led me to ask the question: 'how can we, as therapists, guide people into healthier ways of coping, if addiction is indeed an attempt to manage unbearable feelings related to unfulfilled needs?

How can we help our clients to find natural, internal resources to calm and soothe the nervous system or to revitalize the body-mind, instead of relying on external, toxic sources to quell the pain of 'needs deprivation'? I realised that as a Drama Therapist I would require those skills, and as practitioners we need to have knowledge and tools at our disposal to help our clients ease the 'physical pain of emotions' so that they may find some comfort and safety in the body, thus alleviating the need to escape the body. If we were to attempt to heal addiction, this would be the place to start - the ground zero of addiction after all *is* the body. Just as the urges arise from the body, the destruction plays out on the landscape of the body.

However, in order to correctly apply those skills and tools, a grounded and working knowledge of the nature of addiction and its dynamic interrelationship with trauma and stress and how this impacts the brain, body and mind was necessary in order for me to truly integrate this complex human condition into my understanding. In order to appreciate what embodied therapies can offer, I first had to understand the Bio-Psycho-Social dimensions of the *suffering* that substance users endure; I had to understand *why* it is that people use substances.

Resolving trauma and healing the pain is of course the end goal, but that can take months or years of psychotherapy. In the meantime, what is it that embodied (Arts) Therapies can offer people who are in pain, haunted by their past, trapped in their impaired brains and thus still at the mercy of their addictive mind and self-destructive impulses? How may we then look to embodied therapies to assist people with their day to day stress management and coping of their lives without the substances that they have been relying on for relief for so long.

What is it about a therapeutic way of working that engages the *whole being* (mind, body, soul) that makes it a potentially effective medium for facilitating recovery? Trauma, as it is defined in the context of this research could allude to a significant traumatising event in childhood. It also refers to any negative childhood experiences around loss, abandonment or rejection, an unhealthy, insecure attachment, violence, physical or sexual abuse. Conceptually, it also refers to the developmental impact and cumulative consequences of the original trauma such as emotional pain, stress, anxiety, depression and addiction, to name a few manifestations.

When I reflect on my own recovery journey, there is no doubt in my mind that engaging in creative, embodied, experiential therapeutic processes during my Drama Therapy training, contributed to my own healing. By learning again to be *in my body* (embodied), to feel welcome and safe in my body, to trust its natural movements and its striving for health and growth, I came to respect, care for and appreciate it more. At the same time, I was *expressing and thus releasing* the pain and stress I had been suppressing for so long, whether it be in expressive movements, in dramatic enactment, in a creative process or a picture or painting.

Becoming more embodied made me feel more alive; I felt as if the more I moved, expressed and created with my body, the more energy was generated and the more I came back to life. I gradually regained the vital energy that I had lost during the years of abusing my body and the more alive and creative I felt, the more joy and peace was available to me and the less compelled I felt to do anything that would compromise that feeling of wellbeing.

1.2. Introduction to Drama Therapy and Movement

In this paper I advocate for the use of embodied therapeutic approaches in conjunction with traditional psychotherapeutic approaches in addiction treatment. The specific modalities I will refer to are Drama Therapy (DT) and Dance- Movement Therapy (DMT). In chapters 3 and 4, I discuss the etiology (causes) and the neuro-biological impact of addiction respectively and attempt to link it back to how certain qualities and outcomes of DT and DMT and other 'body-bridging' practices can support the client in restoring health and balance or facilitate body-mind integration which is fundamental to wellbeing, as the science will demonstrate.

Moreover, I believe these modalities can offer opportunities to explicitly and implicitly teach skills for relapse prevention as they have the capacity to foster embodied presence or body mindfulness, Self-awareness, emotional / self-regulation, self-soothing and enhanced impulse control - by virtue of their holistic and integrative approach due to their creative embodied nature. However, before I go into the trauma and addiction theory/science, it is important to offer an introduction to DT and DMT; what these mediums are and what potential outcomes they offer, so that the reader can make their own connections as to the value of these approaches with regard to the treatment of addiction during the course of their reading.

In my experience, Drama Therapy is a creative, expressive, experiential and *body-based* form of therapy which appears to have many beneficial therapeutic outcomes. It can be defined as the "intentional and deliberate use of the *theatre arts* for therapeutic benefit" (Krebs, 2015)**.** This can range from play, role play, mime, improvisation, to enactment, to the use of masks, props, costumes, installations, dance, movement, song, sound, instruments, drumming, plays, drama, full scale theatre productions (and visual art processes). Drama Therapy (DT) is an inexhaustible creative modality in which, depending on the skills and experience of the therapist and the needs of the group. I believe almost any creative, experiential and embodied process can be included within the framework of the creative and Expressive Arts therapies.

> "Drama Therapy is an active, experiential approach to facilitating change. Through storytelling, projective play, purposeful improvisation and performance, participants are invited to rehearse desired behaviours, practise being in relationship, expand and find flexibility between life roles, and perform the change they wish to be and see in the world" (excerpt from the North American association of Drama Therapy website)[i].

The therapeutic application in the various psychiatric, community, and medical contexts of "art, music, dance, creative or guided movement, drama and poetry that includes activities such as creative writing, drawing, drumming, sandtray and play" are what can be considered Expressive therapies according" (Malchiodi, 2005, pp. 2-3). These "permit individuals of all ages to express their thoughts and feelings in a manner that is different from the strictly verbal means and have unique properties as interventions" (Malchiodi, 2005, p. 1). Expressive therapies according to Mcniff (1981) are those that "introduce *action* to psychotherapy" (Malchiodi, 2005). Whereas according to the National Coalition of Creative Arts Therapies Association (NCCATA); 'art, dance, drama, music and poetry' that have strong healing intentions are considered Creative Arts Therapies and function as psychotherapeutic practices in their own right, according to Malchiodi (Malchiodi, 2005, pp. 2-3).

The North American Drama Therapy association (NADTA, 2019) on their official website describes DT as "the systematic and intentional use of drama/ theatre processes, products, and associations to achieve the therapeutic goals of symptom relief, *emotional and physical* integration, and personal growth" (NADTA, 2019). Embodiment is one of the primary active principles in DT and thus to become more embodied is also one of the fundamental outcomes. DT implicitly aims to 'integrate body and mind' and 'can provide an environment where people struggling with addictions can express emotions', 'explore future possibilities, develop skills, make personal connections and practise making healthier choices' (NADTA, 2019)[ii].

Furthermore, according to NADTA, DT can provide a platform that 'allows clients to tell their stories, to solve problems, achieve catharsis and to extend the depth and breadth of inner experience' (NADTA, 2019). In addition, it allows for the creative 'exploration and practise of behaviours and feelings without negative consequences'. Through role playing for example, "participants can gain insight about the effect of their behaviours and choices on others", explore possible triggers and can even 'role play' making different choices (NADTA, 2019)[iii]. In this way DT can offer opportunities to practice new behaviours before re-entering society.

Some of the general benefits listed by NADTA for addicted populations in their online fact sheet are: "Positive self-image, self-esteem, and self-discipline; Communication and social skills; Healthy living alternatives and skill building; Broadened understanding of the negative consequences of substance abuse on their bodies, minds, families, and communities" (NADTA, 2019). Drama Therapy has been successfully correlated with substance use recovery.

Although, the outcomes of DT go beyond what was mentioned by NADTA, it furthermore offers clients the opportunity to access their creative, intuitive, interoceptive, imaginative, spontaneous aspects of Self which are all the higher order cognitive brain functions. This paper will hopefully demonstrate why developing these faculties are important, especially with an addicted population. Collaborative group experiences seem nurture the qualities of empathy, attunement and bonding, which may remediate negative attachment experiences.

Although I unfortunately cannot within the scope of this paper discuss Dance/movement therapy (DMT) as a therapeutic practice in too much detail, I will include the Body-mind benefits of movement, as something to consider in DT interventions, especially with addicted clients. A short definition of DMT is valuable, as the philosophical underpinnings of DMT are based on the "assumption that body and mind are interrelated", which is a fundamental premise of all embodied work. DMT can be defined as the "psychotherapeutic use of movement" (or dance with healing intentions) and as a "process that furthers the emotional, cognitive, and physical integration of the individual" (NCCATA, 2004)(Malchiodi, 2005, p. 3).

I will discuss the value of an *integrative approach* that includes methods from DT, DMT, the field of movement and body-mindfulness in the context of recovery. This, with regard to how being *more embodied* (when mind and body is communicating more effectively) can support neuroplasticity, nurture Self-awareness, improve emotional regulation, Self-soothing and impulse control**,** all with the potential to help prevent relapse; keeping in mind that recovery is comprised of sustained relapse prevention. A holistic, creative approach may have the potential to "release emotions, allow for expression, promote symptom relief, and support personal growth through active participation", suggests Linda Krebs (Krebs, 2015, p 33).

The psychological benefits of the Creative Arts therapies have been known to support healing by virtue of their 'self-expressive' nature and 'emotion relieving outcomes' and may offer an 'insight' into what is beneath the surface of consciousness and in the unconsious. They create ways to explore the '*shadow*' through images, form, symbol and metaphor and 'make concrete'/ visible and express or release what is there (Krebs, 2015). When space is made, new life energy can enter. A more detailed analysis of the value of Drama, DT and movement will be offered later in correlation with the biological and psychosocial needs of the addict.

1.3. Rationale and limitations

I believe that *bridging the gap between the medical sciences and the Arts, especially the healing Arts, is imperative,* seeing as they need each other, for two reasons. Firstly, for Arts Therapies to be taken more 'seriously' as treatment approaches, within their own right, we, as researchers and practitioners, need to be able to apply the relevant science to our practice and produce more 'evidenced-based' approaches (and outcomes) and secondly because the sciences have a long way to go in learning what true healing is all about.

I would like to believe this research may be important to Drama Therapists as we sometimes take for granted what it *takes* to be embodied, because we are naturally that way inclined. I think I was partly called to become a Drama Therapist because I have this natural propensity to sense, experience the world and communicate meaning through my body. From a young age, I was naturally 'embodied', that is, until I experienced the opposite end of the spectrum during the years I was lost to addiction. I became so disconnected from my body, that I could not recognise my Self in the mirror. It was only after I connected with my body again, after I learnt to silence the 'voices' and urges by gradually re-entering into embodied presence, (the here and now with my body), that I could tune in to hear what my body needs to heal itself.

We, as Drama Therapists, are in the unique position of being able to facilitate the client's deeply intimate, vulnerable making and sacred process of coming home to their bodies which is to say they are coming home to themselves, returning to wholeness, to an integrated state - a state of optimum balance and health. However, in order to do so effectively and with the tenderness, integrity and skill it deserves, I found it personally important to understand how and why the body-mind of the addict becomes so ill, distorted and disconnected by the impact of the trauma and stress, which both also seem to initiate and perpetuate addiction.

Moreover, I feel it is important to have a basic scientific understanding of the brain-body-mind processes, because, as I understand it, if these biological precepts are understood in principle, then accessing intuitive, body-orientated therapeutic approaches and applying methods to integrate the mind and body become easier for the therapist and therapeutic strategies that potentially trigger a stress response may be avoided. This is possible when the underlying interrelated psychological, physiological and neurological principles have been assimilated by the therapist. This is especially important when working with trauma.

I feel that the field of Drama Therapy has much to learn from Somatic psychology, biology and neuroscience and that somatic and 'Body-mind' theory and principals should be part of our training. As much as we like to think of ourselves as practising in a body referenced way, how many of us truly 'embody' this *way of being* in our own lives? Furthermore, to what extent are *we* skilled in 'mindful body' approaches; those that I believe, should be the very core of each therapeutic engagement, especially with traumatised and vulnerable 'at risk' clients. Becoming skilled in the art of 'mindful body' facilitation and being able to transfer these skills to suffering clients, primarily because I have walked that road, inspires me to do this work.

I feel that in our training, much like in the 'traditional' and outdated Western medical model there seems to exist a duality, a separation of the 'theory' of mind (psychology) and body, although in practice (DT), we do combine them. What is also missing in DT for me, is a truly holistic and integrated approach. I feel as if there is a tendency to avoid looking to the more 'esoteric' healing practices (e.g.: yoga, mindfulness), that at their very core are concerned with health and wellbeing. Those that integrate and balance the psyche, mind, body and brain systems to activate the Self-healing and natural internal regulation capacities of the organism.

The significance of the inquiry is also rooted in a pragmatic, *solutions orientated approach*, in the way of it being an exploration into the nature of, mechanisms, and factors that perpetuate addiction. Understanding why people begin to use substances in the first place and why it is that they become addicted and the value of offering them useful skills to help them navigate the recovery process should be a critical framework for any therapist that wishes to work with such a population. I believe it is also important for the client to understand the addiction process and essential that they can link that knowledge to their own experience and life. The therapist should also be able to transmit this information accurately and confidently.

The principle focus in my tertiary training in psychology was on the neuroscience, chemistry and behavioural presentations of addiction. We were taught how to recognise, diagnose but not how to facilitate recovery. This is a specialised field and one within which I wish to work, thus another reason for pursuing this research is professional. To treat those suffering, we/I must understand 'why it is they do what they do' and this is quite simply why I investigated addiction in the way that I did. I also did it in the hope that it may, not only empower me with knowledge and skills, but perhaps other Drama therapists as well. The primary rationale is that I walked this path and healed myself and feel my contribution is valuable to this area.

1.4 Hypothesis and Problem statement

The interdependent relationship that exists between the various Body systems and the psyche (mind) in totality is referred to conceptually as the Bodymind in Somatic psychology. Linda Hartley speaks of the importance of building bridges between the 'once separated processes of mind, body, and spirit' and the Bodymind as the whole integrated state of being (Hartley, 2004). This is the natural state of the human being, which I believe is disrupted by trauma, stress, anxiety and substance abuse. This body of the work is comprised of an examination of the *impact of trauma, stress and pain* on the brain, body and mind (whole organism) in terms of how it relates to addiction. This serves as the theoretical foundation for the discussion on how embodied and expressive therapies can potentially provide some relief. An assumption I hold on the nature of th*e impact* of trauma is that some kind of *disruption in development*, can occur, that may result in a lack of coherence between body, brain, mind.

Thus, by highlighting the brain-body-mind interdependence in the role of the organism's health, I am hoping to make a theoretically grounded argument for *embodied therapeutic* interventions. My hypothesis is that therapies like DT and DMT *implicitly integrate* mind and body by virtue of being *in-body* and engage the *whole being* in a more holistic way than traditional therapies would. This is based on my core assumption, which that the *whole organism (the Bodymind)* is a Self-regulating, Self-perpetuating, Self-creating and Self-healing energetically closed system; one, that given the right conditions and (Self) care can heal itself.

Weaving the complex connection between brain, body and mind is critical when addressing trauma or addiction, as all these parts are impacted and may have cascading effects on each other. I am of the opinion that trauma causes a 'disconnection' in the 'bodymnd', the mind and body stop speaking to each other in healthy ways. This may manifest as diverse symptoms, the one I am interested in is *substance use;* this presents as attempts to manage the feelings and sensations that arise from the fundamental split from the Self that may have been causes by the trauma. How can we *re-cover*, re-connect and re-integrate the brain, body and psyche so that the internal and innate self-healing resources of self-awareness and self-regulation, emotional resilience, capacity for self-soothing and self-care and higher order cognitive functioning (presence, intuition, creativity, concentration, attention, discernment, choice) can be accessed (again)? For this to become possible we need to return to the wisdom of the body; this being said, *how can we befriend the body* though embodiment processes?

1.5. Research question

What role do the manifestations of trauma (anxiety, stress, emotional pain) play in addiction in terms of its impact on the *bodymind* and how can embodied therapies such as Drama Therapy and movement facilitate (or support) recovery from addiction?

1.6. Research method:

The study takes the form an interdisciplinary, non-systematic literature review and is qualitative in nature. I initially reviewed literature on *addiction, trauma and the body* in order to establish a sound theoretical understanding for myself in terms of these complex topics. These I examined in some detail from a neuro-biological perspective, as I am primarily concerned with *the body.* This was followed by a review of relevant literature from the fields of Somatic psychology, Drama therapy and Dance movement therapy. I then attempted to weave all the correlating ideas I came across together to create a coherent argument for the value and usefulness of embodied therapies in terms of addiction treatment and recovery.

A qualitative study according to Corbin and Anselm consists of a "a process of examining and interpreting data in order to elicit meaning, gain understanding, and develop empirical knowledge" (2008, p. 18). I believe my report achieved these aims in that I examined data in the form of literature across various disciplines, in order to extrapolate meaning for myself and for the reader on topics listed above and what it means to be addicted. I also attempted to substantiate my argument in a coherent way as to why embodied therapies may be the way out of addiction; why and how an 'embodied solution for the problem of disembodiment' is possible and what this all means. I, myself, aimed to 'gain technical understanding' in terms of the neurobiological mechanisms involved in trauma, stress and addiction; in order to understand what solutions could be applied from a professional and therapeutic perspective and to generate understanding as to why embodied therapies may be and are effective.

A non-systematic literature review forms the basis of the qualitative study, in that I felt organically and intuitively drawn to certain literature, theory and science that validated my experiences and assumptions and used what I found most relevant as supporting literature to develop an argument that advocates for embodied Arts therapies. A non-systematic Literature review is one "that describes (and may appraise) the state/nature of existing evidence, but does not follow a standardised, systematic methods" [iv](eklipse-mechanism.eu). It is thus a more informal approach and leaves more room for creativity and interpretation.

1.7 Aims and objectives

The overarching intention of this study was to examine the role of trauma and stress in terms of how it relates to 'impairment' and the later onset of addiction, which starts out as an attempt to assuage the uncomfortable body sensations attributed to the manifestations of trauma. These may present as hypervigilance, anxiety or depression, these negative states, "may consequently cause the person to attempt to assuage anxiety using substances that temporarily soothe the sympathetic nervous system and initiate an illusionary sense of calm and equilibrium" (Dayton, 2000). I aimed to do this within the conceptual framework of the Bio-psycho-social paradigm under which I discussed the implications of trauma and addiction in terms of how it impacts on the developmental and the neuro-biological dimensions.

Secondly, I aimed to find evidence that embodied therapies can mitigate the impact of trauma in the body, by way of them facilitating mind- body integration and so developing recovery resilience. I aimed to discuss some general applications of an embodied and expressive therapeutic approach in the treatment of addictions, with a theoretical orientation towards DT and DMT. In examining trauma and how it impacts the systems of the body giving rise to addiction, I aim to simultaneously illustrate the significance of the relationship between these systems, which, for the longest time, have been viewed as separate and treated separately as per the Cartesian worldview. Hence, the separate fields of medicine and psychology.

My objective here, by explicating the relationship of the constructs (trauma, stress, anxiety, pain, addiction, brain, body, psyche), is to ground my theoretical orientation in progressive trauma and addiction theory and neuroscience, and in so doing advance the idea of the importance of Bodymind (whole) Self-awareness, and how its connection and its integration is the key to healing, wholeness and wellbeing. This, at its best, is one of the primary goals of body orientated therapy or, at the very least, a fortuitous by-product, and something that most conventional Drama Therapy processes accomplish by virtue of its embodied nature. That is in any case my hunch, the objective is to find out if this is indeed true and how it is so; if indeed Body orientated or embodied therapies are valuable in the treatment of addiction and to offer some insight into how we as Drama therapists can apply our medium and the principles of embodiment more appropriately when working with addicted populations.

1.8. Overview of Research

Chapter one represents what would have been my proposal, with introductions, rational, hypothesis, research method, research question and overview. Chapter two serves to provide the clinical features, representations, and conceptualisation of addiction. In chapter three, I include a discussion on the etiology (the causes) as well as the social and developmental dimensions of addiction in reference to early childhood trauma, which is the baseline etiology.

Next, in the theoretical body of the report, I examine the relevant theories from neuroscience, biology and some psychology related to *trauma, stress, pain, addiction and the body*, in order to provide the foundation for a discussion that advocates for a holistic, *integrated, embodied approach* to treatment. Chapter four will constitute the theoretical foundation of the work.

The objective here is to discuss what I find useful in terms of how trauma, stress and pain impact the body and contribute to the onset and progression of addiction and then follow with the value of embodied therapies in their capacity to facilitate recovery in Chapter five.

Chapter five is comprised of sections that briefly cover the concepts/approaches that I advocate for including or at least being mindful of in Dramatherapeutic sessions with addicts, They are as follows: body-mindfulness, posture, gesture, brain waves, breathwork, meditation, mindfulness, therapeutic touch, drama, Theatre, Drama Therapy methods, Dance Movement Therapy and conscious authentic movement. ‘Chapter 6’ is brief and includes my conclusion and recommendations. The reference list and endnotes are at the end.

Chapter 2: Conceptualization and clinical representation of substance use and related disorders

2.1 Introduction

> "Addictions, even as they resemble human yearnings, are more about desire than attainment. In the addicted mode - the emotional charge is in the pursuit and the acquisition of the desire object, not the possession and enjoyment of it...In the addicted mode - the greatest pleasure is in the momentary satisfaction of yearning....*the fundamental addiction is to the feeling of NOT being addicted* - The *addict craves the absence of the craving state*. For a brief moment he is liberated from emptiness, from boredom, from lack of meaning, from yearning, from being driven or from pain. He is free, his enslavement to the external, the substance, the object of the activity, consists of the impossibility (in his mind) of *finding within himself the freedom* of longing and irritability" (Maté, 2018, p. 107)

Addiction does not have to be a life or a death sentence, and recovery doesn't have to be 'hard'. One can, with the right combination of therapeutic applications and medicines return the brain and body to the *former non addicted state* or exit the 'addicted mode'. As Gabor Maté suggests, what the addict truly craves is not the effects of the substances themselves per say, but to be *free from the addicted mode, free from craving*. This insight is profound, as it is not the substance which is craved by the addicted person, but the "absence of the craving state" that substances temporarily provides. The good news is that *there are ways* to achieve the 'impossible objective' of "finding *within himself* the freedom from longing" other than through the "pursuit and acquisition of the desired object" (substances) (Maté, 2018, p. 107).

The historical conceptualisations of 'addiction' have evolved over time. Even some of the original plant derived substances we are 'addicted' to now years were used as natural medicines for centuries. In modern times, addiction quite simply refers to a 'a dysfunctional dependence on drugs and alcohol or on behaviours such as gambling, sex, eating' (amongst many other behaviours), according to Gabor Mate (Maté, 2018, p. 127). Etymologically, the term '"addicere" in Latin means to 'assign to', or an activity you have 'assigned yourself to', something you are 'passionate about', with no other connotation[v]. Although, the Romans had another use for the term, with more sinister undertones, according to Maté.

Someone who was 'assigned to their creditor as a slave' because of having defaulted on a debt was known as an "addicere" (Maté, 2018, p. 127). This implies that the user has become 'enslaved' to the substance as he would be to a 'master' and has contributed to our modern notion of being a 'slave to a habit'. In today's language someone is considered to be an addict if they "continue to use (harmful substances), even when evidence strongly demonstrates that the drug is doing significant harm. If users show the pattern of preoccupation and compulsive use repeatedly over time with relapses, addiction can be identified" (according to a consensus statement by addiction experts panel in 2001) (Maté, 2018, p. 127).

To understand addiction from a more theoretical perspective, or to make recommendations for treatment approaches, I thought it pertinent to provide a clinical overview of addiction. Even though Arts therapists are not in a position to diagnose, I personally feel it is crucial that we are familiar with the clinical representation, symptomology and diagnostic criteria just the same, so that we may recognise it when it presents itself and these may serve as guidance.

2.2 Clinical representation and features of substance use; definitions and terms.

2.2.1 Substance use, abuse and dependence

Substance use is considered abusive (to oneself) or harmful when it results in 'adverse social, occupational, psychological, legal, or physical consequences of the person involved' due to their dysfunctional behaviour 'while under the influence of a substance' (Ellis et al, 2012, p. 32). For a Substance Use Disorder (SUD) to be formally diagnosed by a clinician, they would typically need to identify specific features by referring to the latest version of the Diagnostic and Statistics manual (DSM VI), which contains a 'single disorder category named *Substance Use Disorders* containing 11 operationalized criteria' (Ellis et al, 2012, p. 39).

Out of the 11 criteria, they should be able to noticeably observe a minimum of 2 to 3 of the 'criteria that need to be present during any time period and the symptoms should lead to significant impairment and distress' (Ellis et al, 2012, p. 32)**.** The more criteria noted, the more severe the disorder and the more urgency should be applied to treatment. Below is a summary of the International classification of diseases (ICD v. 10) criteria (WHO, 2004 as cited in Ellis et all, p.32): wherein 3 or more should have occurred consistently for at least 1 month within a 12-month period. I included the stages of substance use, abuse, and dependence.

a. When a person shifts *from occasional and perhaps recreational use (parties)* to using *more frequently and compulsively* and then loses control over their substance using behaviour (tries to stop but can't); furthermore, when the using is causing/has caused physical or psychological harm - *it can then be considered substance abuse.*

b. In addition to this, when they find themselves having to use more, or having to use it more often and when *substance use* (and related activities) begins to take precedence over other life activities, it more *acutely enters the realm of substance abuse.*

c. When the individual spends ever increasing amounts of time engaging in substance taking behaviour and gives up important activities (work/sports/family) to use drugs, often alone, it *begins to enter the realm of dependence*. For this to be confirmed other factors have to be present (such as some evidence of tolerance and withdrawal).

d. The concept of *tolerance* is noted when the person needs to *consume more and more* of the substance in order for the substance to have the same effect as before, due to 'increased physiological threshold'. Dr Gabor Maté adds that a person does not necessarily have to have developed a tolerance to be addicted (Maté, 2018, p. 131).

e. Tolerance can be accompanied by 'substance specific withdrawal' (Ellis et al, 2012, p. 32) effects, as each substance has trait withdrawal symptoms such as nausea, sweats, aches, anxiety, depression. "Withdrawal is constituted by a characteristic cluster of symptoms on cessation or reduction of the substance" (Ellis et al, 2012, p. 32).

f. If the client presents with either *withdrawal or tolerance*, **'**then it can be assumed that a *physiological dependence* is present' (Ellis et al, 2012, p. 32). If these two 'conditions' are observed, then the problem turns from *substance abuse* into *dependence.*

g. Either way, "the addict comes to *depend on the substance* in order to make himself feel momentarily calmer or more excited or less dissatisfied with his life" says Maté (Maté, 2018, p. 131).

h. The final condition is that the individual "compulsively continues to use substances despite adverse consequences to the persons physical or psychological health" (Ellis et al, 2012, p. 32). A person can be formally diagnosed with a Substance Use Disorder (SUD) if they; don't stop using regardless of being dysfunctional, experience negative consequences such as failed relationships and job losses, poor academics or accidents.

In order to distinguish between the states of physiological 'dependence on medications such as antidepressants' for example, that are also characterized by tolerance and withdrawal, but which are benign; the DSM IV, as referenced in Ellis et al (2012), includes the term addiction to describe the 'typical functionally impairing characteristics of drug addiction' (Ellis et al, 2012, p. 39). In other words, the state of *dependence* must cause *significant* impairment.

Koob's (2009) definition in Ellis et al (2012) is more clinically orientated. He describes dependence as a "chronic relapsing *medical disorder* characterised by a loss of control over substance intake, associated with the development of *neuro - adaptations* that result in the presence of *negative affective* states when the *substance is withdrawn"* (Ellis et al, 2012, pp. 32-3 3). *Relapse* occurs when the addict wants to escape or numb precisely these *negative affect states* (pain, intolerable feelings and withdrawal sensations) that Koob refers to and uses again and again, which may lead to addiction. Cami and Farrè define addiction in terms of the behavioural paradigm as "a chronic, relapsing disorder in which compulsive drug-taking behaviour persists despite serious negative consequences" (Cami & Farrè, 2003:975).

The definition of Addiction, which is also characterised by the 'addiction cycle' or the self-perpetuating feedback loop described above, according to Gabor Maté is; "any repeated behaviour, substance related or not, in which a person feels compelled to persist , regardless of its negative impact on their life and the lives of others" (Maté, 2018, pp. 128-129), and:

1) Compulsive engagement with the behaviour, a preoccupation with it
2) Impaired control over the behaviour
3) Persistence or relapse, despite evidence of harm, and
4) Dissatisfaction, irritability or intense craving when the object, be it a drug, activity, or any other goal - is not immediately available.

Substance induced disorders are differentiated from pre-existing mental disorders. Discerning what came first (the SUD or the mental disorder), appears to be challenging. This *dual diagnosis* of both SUD and mental disorder (pre-existing or induced) is termed *co-morbidity*. 'About half of people who experience a mental illness will also experience a SUD at some point in their lives and vice versa' according to the research done by Ross and Peselow (Ross et al, 2012) and Kelly and Daly (Kelly et al, 2013). Pre-existing mental disorders are technically distinguished from *substance induced mental disorders.*

Substance induced mood and anxiety disorders are characterized by a "disturbance of mood - either depression of mood or anhedonia, anxiety, irritableness or mania that are thought to be due to the *direct effect of a substance/s"* (Ellis et al, 2012, p. 42). Horsfall (2009) in Ellis et al (2012) comments that "comorbidity introduces the problem of differentiating substance induced syndromes from primary mental disorders" (Ellis et al, 2012, p. 36). Furthermore, high incidences of 'co-occurring SUD' are common with people that suffer severe mental illness 'with prevalence rates often in excess of 50% according to Weich & Pienaar (2009) in the South African context' (Ellis et al, 2012, p. 36). So almost half of the people suffering with a mental disorder have a SUD and possibly also a *polysubstance use disorder*, which means they are addicted to 2 or more substances simultaneously, e.g.: alcohol, cocaine and Prozac.

The terms dependence and addiction are often used interchangeably. The term Addiction is more all-encompassing, it goes far beyond the mere physical dependence to include the emotional and psychological aspects of the individual. Addiction is best used to describe the state of chronic and unrelenting dependence, that follows the stages of use and abuse. Experts have noted that addicts are even hooked on the *drug seeking behaviour* that precedes actual drug taking. In any event, substance using on any point of the spectrum is symptomatic of a deeper issue; "we should be cautious not to confuse the manifestation for the underlying process…the symptom for the cause" says Dr Gabore Mate (Maté, 2018, p. XVII).

2.2.2. Conceptualisation of addiction and the Bio-psycho-social paradigm

There seem to exist many perspectives on addiction, each one attempting to explain the causes, which would thus determine the treatment approaches. A major contributor to my understanding of addiction in relation to trauma is addictions expert Dr Gabor Maté. He essentially assigns the root cause of addiction to the individual's experiences of trauma in childhood. He also talks about how 'suppression of the trauma, when it doesn't find a means of *expression,* can result in diseases in the body' (Mate, 2018). The Bio-psycho-social *paradigm of addiction*, made popular by Dr Maté, will serve as my theoretical framework.

"The Bio-Psycho-Social (BPS) approach posits that *biological, psychological, and social factors* and their *complex interactions* play a role in health and disease and thus have implications for treatment" (Babalola, Noel & White, 2017). It was developed decades ago by Drs George Engel and John Romano (Babalola, Noel & White, 2017) and emphasizes that human illness (and health) is be understood and appreciated fully in its diverse, multifaceted and influential

contexts; this is especially true for addiction, as there is no *one* cause (or cure). The same goes for understanding that treatment should not be viewed in a linear, one dimensional way but approached in an interdisciplinary, integrative and holistic way. When applying this model to addiction theory and practice, it can be described as an attempt to "delineate the *closely interrelated psychological, social and neurological dimensions of addiction*" (Mate, 2018).

What this model (BPS) attempts to do is to integrate and apply understandings of social, developmental and psychological factors to biological, chemical, neurological and medical factors and vice versa. It also highlights the complex and connected processes between the mind (psyche) and body (biology) in the development of disease and thus by implication also in the restoration of health. In the etiology chapter (3), I will discuss the *social* part of the Bio-Psycho-Social paradigm, which appears to be related to negative experiences in childhood and how they impact normal brain development which potentially leads to higher risk of SUD.

Bessel van der Kolk's book, the 'The body keeps the score', in which he discusses the complex relationship between *trauma, stress and emotional pain*, provides a groundbreaking scientific basis for how these factors impact the body. In it, he reveals how trauma impairs the brain and manifests in the body as stress responses, heightened arousal, uncomfortable sensations and feelings and illness, preventing those affected from living in the present and subsequently also fuelling the need to 'escape through substances'; he suggests that 'drug addiction and alcoholism is a way to manage unbearable sensations in the body' (van der Kolk, 2014). His main premise is that trauma is 'stored in the body', hence the title - meaning that the impact of trauma is archived in the 'memory of the body' and is triggered by associations, external influences or people. This results in uncomfortable and painful 'trauma stress responses' in the body that the addict has learnt to assuage with substances through conditioning.

"*Addiction is a human problem that resides in people*, not in the drug or in the drug's capacity to produce physical effects" writes Lance Dodes, a psychiatrist from Harvard medical school (Maté, 2018, p. 134). The surprising results from the soldiers who returned from the Vietnam War (only 20 % met the criteria for the diagnosis of addiction) suggested that the addiction did not arise from the drug itself (heroin), but from the needs of the men who used the drugs (Maté, 2018, p. 134); stemming perhaps from psycho-emotional needs that were not met during wartime, which made sense seeing as they are at war and far from home and family.

So, if addiction is not due to the drugs with addictive potential, what then characterizes it? Addiction is a challenging condition, a complex interaction between human beings and their environment, one that should be viewed from multiple perspectives. The need to fill one's mind or body with external sources of comfort, expresses a failure of Self-regulation; an inability to maintain a reasonably stable internal atmosphere; this deficit may be due to early trauma and/or unfulfilled needs and so we come to rely on external sources to fulfil those needs. This dependency may also suggest that the individual cannot access their own internal sources. It's not that they don't have any, they have simply forgotten how to access it; this is our role as therapists, to facilitate activation of the self-healing capacities of the individual. When there is a need or a void to fill, a part is presumably missing; "the heart of addiction is dependency, excessive dependency, unhealthy in the sense of unwhole (unholy) dependency that disintegrates and destroys", according to Father Sam Portaro (Maté, 2018, p. 131).

To be dependent (addicted) means there is a powerful attachment to a harmful substance. The substance user comes to *depend* on the substance in order to feel a temporary relief from pain, more excited or less dissatisfied with life or to reduce *stress or anxiety related feelings.* Add to this mix emotional isolation, powerlessness, fear and a compromised sense of safety and you have the exact conditions that promote the *neurobiology of addiction* in the human being. Once the stress/fear factor abated when the soldiers returned home from Vietnam, so did the addiction. The ones who persisted in heroin addiction back home were for the most part, 'those with histories of unstable childhoods and previous drug problems' (Mate, 2018).

There appears to be a pre-existing vulnerability present in those who continued to use drugs. Drugs per se, do not make anyone into a substance user, as there are many cases of people who use drugs recreationally and never get addicted. There must therefore be a vulnerability and a propensity towards certain substances that offers the brain certain rewards which it doesn't naturally produce, which seem to stem from developmental and social deficits. How these 'deficits' come about will be explored in the chapters that follow. According to (Maté, 2018) there has to be three factors that coincide, for a substance addiction to occur:

1. Bio- A drug with addictive potential (that activates dopamine or opioid circuits)

2. Psycho- Stress (people, triggers, associations, life events, environment, work, study)

3. Social - A susceptible organism (vulnerability due to 'social' trauma in childhood).

Chapter 3: Etiology and dynamics that perpetuate addiction with a focus on childhood trauma

> "What is addiction really? A sign, a signal, a symptom of distress. It is a language that tells us about a plight that must be understood" - Alice Miller [vi]

3.1. General discussion

What follows here is an exploration of what drives people to take drugs; with a focus on the social and developmental dynamics that perpetuate addiction. It is therefore important to start with the question, 'Why do people use drugs? What are the social factors that perpetuate addiction? Why is it that what happens to one in childhood has the potential to make one vulnerable to substance use later in life? This discussion serves as the *Social* part of the Bio-psycho-social paradigm. In the context of this paradigm, the *social* dimension is considered a precipitating factor as it influences the biological and psychological dimensions.

What is meant by this in broad terms is that when early childhood emotional and /or physical needs are not met by caregivers it may impact the developing brain in such a way that it poses the risk for substance use later on in life. My intention here is to develop and illustrate my understanding of what is associated with the constructs of *trauma* that are implicated in addiction. The kind which is of special interest to me is *relational and developmental* and which I will refer to collectively as 'the trauma of not being seen'. For example, these would be negative childhood experiences such as abuse, neglect, abandonment and rejection.

In order to facilitate recovery effectively, the desired outcome of which would be to ultimately change the behaviour, one has to understand why it is that people use substances in the first place; that is, if one accepts the premise that it is symptomatic of an underlying issue or process and that the behaviour is indeed a *manifestation of and an attempt to assuage pain.* Gabor Maté suggests that when we consider how desperate people must to be to 'escape' their suffering by continuing to use substances despite the 'abundance of disastrous consequences', we will begin to appreciate "how very powerful the dynamics that perpetuate addiction are" (Maté, 2018, p. 43) and how deeply painful the trauma must have been. A question more relevant to treatment is "how are we to address the manifestations of despair, without understanding the despair itself", asks Dr Gabor Maté (Maté, 2018, p. XVIII), and although each 'despair' is different, they seem to share the common theme of trauma.

Maté describes “how each story unfolds in the uniqueness of each human being, each one to be acknowledged and witnessed anew, every time it is told” (Maté, 2018, p. 55), so generic approaches should be avoided. The conditions, events and circumstances in a person’s life that precipitate substance use are as unique as the person. However, it seems the overarching factor is that it is an act of desperation driven by a need to ‘escape’ one’s body and mind due to the fact that one is experiencing intolerable feelings of either physical or emotional pain, despair, distress, isolation, fear, anxiety, uncertainty, amongst many other negative affective states. That these feelings are so intolerable that “people jeopardize their lives for the sake of making the moment liveable” (Maté, 2018, p. 28), speak to the levels of trauma that create the pain, stress and discomfort that must be experienced by substance users; so much so that in the end they are prepared to risk and lose everything to just make it through 'the moment'.

Dr Gabor Maté says; “The first question to a client shouldn't be, why the addiction - but why the pain? (Maté, 2018, p. XIX). Hence the real question is what is causing these negative affect states? What is the origin of the individual’s despair? What is causing the pain? Maté goes on say that another significant dynamic that causes people to ‘use’ is 'spiritual deprivation'; a spiritual void or what is termed the ‘GOD shaped (w)hole' and that ingesting substances is an attempt to (full) fill this 'hole', although he also adds that the void is often (but not always) caused by the 'unbearable abuse suffered as a child' (Maté, 2018, p. 79). Van der Kolk concurs, in that being able to answer the question of '*why* people use drugs' is key to healing. He says:

> “We (therapists) need to talk about what drives people to use drugs. People who feel good about themselves don't do things that endanger their bodies...traumatized people feel agitated, restless, tight in the chest, you hate the way you feel. You take drugs in order to stabilize your body” (Maté, 2018);

…to feel better, to stop feeling the pain or to feel more alive, energised, awake, more human.

Consequently, because addicts are people who have generally suffered greatly; if that were not the case, they would not be addicts (and who are we to judge their choice of relieving their suffering through the only means they know), then a human centred and unquestionably compassionate approach to addiction treatment is so critical. In order to be effective as therapists, we need to 'be able to see the (suffering) child in the suffering adult” (Maté, 2018, p. 35) and find it within ourselves to exercise compassion and avoid judgment; in addition to focusing less on clinically based outcomes and more on understanding the pain.

Dr Gabor Maté writes “so long as treatment facilities focus mostly on trying to change the behaviours of addicted human beings (CBT, AA, NA), instead of healing the pain (discomfort, distress) that drives those addictions…we will not be able to stem the tide of addiction” (Maté, 2018, p. XXXIII). My concern though, with this report, is not about how embodied and creative therapies can ‘heal the pain’ (although I do believe they can), *it has more to do with how we (therapists) can work towards “supporting the possibility of renewal”* (Maté, 2018, p. 2) and how we can guide people into ways of accessing their innate self-regulatory, self-reflective and self-healing capacities. By using an integrative, embodied, holistic and compassionate approach and because “no human being is beyond redemption” (Maté, 2018, p. 2), we should rather strive to activate their own drive towards health and wholeness in body *and* mind.

3.2. Etiology - impact of trauma and early negative childhood experiences (NCE)

> " Addictions arise from our thwarted ability to love our children the way they need to be loved, from our thwarted ability to love ourselves and one another in the ways that we all need. Opening our hearts is the path to healing addiction, opening our compassion for the pain within ourselves and around us" (Maté, 2018, p. 29)

If indeed addiction arises from a ‘thwarted ability to love our children’, to what extent then does this compromised attachment have an impact on healthy development and what implications are there in terms of how this ‘thwarted love’ generates susceptibility to substance use later on? Or fundamentally, how does the lack of care and love result in an adult with a diminished capacity to love and care for themselves and who may then be prone to self-destructive behaviours? This is a discussion on the ‘social’ part of the Bio-psycho-social paradigm; how the childhood *social context and parental dynamics may* potentially create vulnerabilities and may even contribute the onset of substance use and later addictions.

My focus is 'the trauma of not being seen’ in a general sense, by the primary caregivers (this can range from not being heard, acknowledged, loved or held to abuse). The disclaimer here is that not all addictions are rooted in childhood trauma, but there seems to be overwhelming evidence that most addictions can be traced back to painful or distressing experiences in which the individual’s safety, worth, sense of Self or body was violated by one close to them. Maté states; “hurt is at the centre of all addictive behaviours - it is present in the gambler, in the internet addict, in the compulsive shopper; the wound may not be as deep and the ache not as excruciating and it may even be entirely hidden, but it is there” (Maté, 2018, p. 36).

If we were to apply a 'solution's oriented' approach, then it is important to understand the biological, psycho-social and developmental *needs deficits* of the addict. Considering the high prevalence of the comorbidity between trauma and drug abuse as highlighted by Dr Felitti's ACE study, in which he examined the consequences of negative childhood experiences or NCE's (van der Kolk, 2014, p. 146). If one could address these deficits, then the compulsion to use 'substances to cope' may be more easily managed. This, in addition to resourcing with the necessary coping may facilitate recovery. Dr Norma Volkow sheds some light (2003);

> "Recent brain imaging studies have revealed the *underlying disruption to brain regions* that are important for the normal process of motivation, reward and inhibitory control in addicted individuals. This provides the basis for a different view, that drug addiction is a 'disease of the brain' and the *associated abnormal behaviour (substance use/addiction) is the result of dysfunction of brain tissue*…" (Volkow, 2003).

Either one is born with disrupted brain regions due to trauma in utero or an accident resulted in brain tissue damage, but this is rare. So then, what *kinds of experiences* have the potential to cause 'disruption to critical brain regions' so that the resulting 'dysfunction' generates a propensity for addiction? So then, if one's brain develops during infancy and childhood and one is forced to endure traumatic experiences that potentially impact brain development; to what extent are these experiences associated to the onset of substance use? According to Maté there is always a pre-existing vulnerability with which other factors have to coincide for addiction to occur, which he suggests is *caused by an event in childhood*. Significant stressor/s must also be present in the adult's life to induce the onset of substance use. So, a 'core *neuro-biological* vulnerability, an addictive substance and/ or a behaviour that offers relief, *and* stressors, are the ingredients for adult addiction', according to Maté (Maté, 2018, p. 139).

What we will examine in more detail is how the 'trauma of not being seen' and the distress that accompanies that has the potential to change the neurobiological dimensions of the individual's brain due to it impacting the critical *brain circuits* necessary for endogenous pain relief, connection, and attachment and reward, motivation, survival. We will find that not only are the same brain circuits which are implicated in later drug use, compromised by early trauma; but other circuits, such as those responsible for Self-awareness, self-soothing, Self-regulation and the pathways of the prefrontal cortex (impulse control, inhibition, judgement and logic) which *could offer protection,* are also compromised.

"Our brains are sculpted by our early experiences. Maltreatment is a chisel that shapes a brain to contend with strife, but at the cost of deep enduring wounds", says Martin Teicher - an expert in Childhood Maltreatment & Brain Development (van der Kolk, 2014, p. 149). Not only does the *environment* (physical and emotional) we were brought up in, in addition to the current environment, contribute greatly to our psychological state and *behaviour* (the behaviour is the expression for a deeper issue, not the issue itself), but more fundamentally, 'it changes our basic biology" (van der Kolk, 2014, p. 153), even before we are born.

The neurobiological perspective also accounts for changes in the way of *gene expression.* "Genes are not fixed - *life events* can trigger biochemical messages that turn them off and on" (van der Kolk, 2014, p. 152). These in turn affect the neurobiology of the developing brain. Maté suggests that gene expression is 'contingent on the environment' and that genes merely 'provide the blueprint' (Maté, 2018, p. 181). It is the environment, conditions and experiences that sculpt the brain in utero and in childhood, that potentially negatively affect development and switch on certain genes or switch off others which may lead to an increased propensity for addiction (Maté, 2018, p. 183); "Our genetic capacity for healthy brain development can only find its full expression when conditions are favourable" (Maté, 2018, p. 184).

To demonstrate the significance of conditions in the environment I will refer to the work of Stephen Suomi who conducted a study on monkeys. Suomi found that Baby monkeys, much like us, need physical contact and care from their mothers. He realised that those who were neglected as infants (raised in unfavourable conditions) showed 'anxious, fearful, withdrawn and depressed' behaviour *later on* and consumed more alcohol in an effort to remain calm. Another manifestation he identified were monkeys that were aggressive and impulsive, "but they would binge drink to the point of passing out" (van der Kolk, 2014, p. 153).

This also seems to demonstrate the addictive impulse in humans. Suomi found that due to the monkey's early neglect by their mothers, certain genes were 'expressed' that would have remained *inactive* if it were not for the neglect, e.g.: "a *serotonin gene* was associated with impulsivity, aggression, sensation seeking, suicide and depression" (van der Kolk, 2014, p. 154). Once that gene is 'switched on' it can be passed onto the next generation - this is the basis of the field of epigenetics. Suomi confirmed that "quality of parenting and environment affects the expression of genes" (van der Kolk, 2014, p. 154) and in this way protects us.

Therefore, science confirms what we know intuitively to be true; that safe secure attachments with attuned parenting can offer *children protection against mental illness*. Initially, because it prevents 'disruptive'/impairing genes from activating and secondly because it allows the brain to 'fire and wire' (create neural maps /pathways) in a way that the developing child is able to cope adaptively and functionally with life stressors; whereas those with compromised attachment or insecure, neglectful relationships with primary caregivers may develop dysfunctional coping styles. This was demonstrated in the monkey studies and sadly addiction is one of many manifestations of dysfunctional coping. Let's explore how this protection or impairment takes place from a neurological perspective in terms of the relational aspects.

The role of the environment (which includes quality of care) in brain development is often overlooked (Maté, 2018, p. 180). Maté insists that one of the most important factors that predisposes a person to addiction is, in utero and early brain development and this is highly "influenced by the environment the infant finds itself in and whether this environment and the quality of the caregiving was nurturing or not" (Maté, 2018, p. 180). Bruce Lipton, in his work as a biologist states; "It is the environment within and outside the body that determines which genes are switched on in each cell; the *cells operations* are primarily moulded by its interaction with the environment (and others), not by its genetic code " (Maté, 2018, p. 204).

The unique 'traits and temperaments', tendencies, biological 'protective mechanisms' and vulnerabilities a person has is dependent on which genes are switched on and off and these in turn "impact how we experience our emotions" says Maté (Maté, 2018, p. 202). Epigenetics explains how 'certain life experiences can switch genes on and off'. In a rat study, it was found that 'mothers who licked their babies after birth switched on a gene' that resulted in the baby rats being less responsive to stressors even later on and the 'same applies to humans' (Maté, 2018, p. 204). Cortisol, the stress hormone, crosses the placenta and the blood brain barrier; this has implications for stressed mothers during pregnancy and the impact on the foetus. It has been shown that if the foetus 'experiences the stress' of the mother (cortisol floods the foetus), 'they are more likely to have reduced capacity to manage their own stress levels and may be at risk for mental illness' later on (Maté, 2018, p. 205).

Alarmingly, Dr Bruce Perry, a psychiatrist, found that the 'number and density of dopamine (DA) receptors is determined in utero' (Maté, 2018). This finding has significant implications in terms of an increased proclivity for addiction. We will come to understand that reduced DA

activity is a significant risk factor for addiction, this is due to compromised DA pathways caused either via stress from the mother or due to a lack of *appropriate nurturing* which distresses the infant. Maté concludes that addiction is not 'inherited', it is rather determined by the environment, *both as a result of gene expression and early stress*. However just like these genes were switched off, they can be switched on by remediating experiences. I would suggest that just as unfavourable conditions compromised brain development, favourable conditions that includes appropriate nurturing and healthy attachment can heal the brain.

Dr Maté explains that *'appropriate and repeated stimulation at critical periods'* (healthy nurturing and thus secure attachment) allows 'critical functions' brain centres (also implicated in addiction) such as the 'dopamine circuits of incentive-motivation', the 'opiate circuits of the attachment reward system' (natural pain relief and self-soothing) and the 'self-regulatory centres in the Pre-frontal Cortex (PFC) 'related to inhibition, impulse control and choice', to develop appropriately, thus to 'fire and wire' correctly (Maté, 2018, p. 184). Without this appropriate and repeated stimulation at critical periods, these brain centres do not develop appropriately and are impaired, which can result in low functioning DA and opioid pathways and consequently poor impulse control, low inhibition and poorer PFC/cognitive functioning.

On a neuro-chemical level, these neurotransmitter receptors and circuits can develop and function properly by receiving 'consistent and appropriate nurturing experiences' which then in turn promote healthy attachment and thus 'generate resilience and protection' (instead of vulnerabilities) from poorly adapted coping styles later in life, of which substance use is one manifestation (Maté, 2018, p. 184). According to Maté, appropriate nurturing experiences are multifaceted and consist of '*good nutrition, physical security*' (feelings of safety) and *'emotional nurturing'* (being seen, heard, acknowledged and loved 'unconditionally'). These are *the three fundamental requirements for healthy brain development* (Maté, 2018, p. 185).

With this in mind, I would then argue that addicts need *remediating experiences that express the qualities* of those three fundamental needs that may not have been met by primary caregivers and or 'nurturing conditions' that they may not have received as children. These are *healthy nutrition* (because food is medicine)*, feelings of safety and connection* (first in the body, then with others, in the space, in the world) and an *emotionally nurturing adult.* This can be an individual or a group of people with whom they feel safe enough to be authentically seen and heard or the therapist, who sees, accepts and acknowledges them for who they are.

Once there is *safety in the body*, they may feel comfortable enough to express their pain in a (favourable) environment with people 'attuned' to their needs, and to be received and mirrored with no judgement in unconditional love and acceptance. In the same way a baby learns to self soothe by being attuned to and experiencing soothing responses from the mother, so addicts can learn to Self-soothe and Self-care by being around people that demonstrate it to them. Therefore, the therapist has to have healed all their own addictive tendencies, as they need to embody the qualities and energy of a healed, whole individual.

Science confirms that "maternal contact alters the neurobiology of the infant", positively or negatively and if the 'contact' happens to be negative, the result will be that the inidividual's "experiences and interpretations of the environment and their responses to it will be less flexible, less adaptive and less conducive to health and maturity later on" (Maté, 2018, p. 192). Parents teach their children how to manage themselves and how to Self-regulate. Firstly, by *being attuned* (listening to and responding to) to their physical and emotional needs and then by modelling Self-respect and care and Self-regulation; then, hypothetically their brains will develop normally and they may be protected from a vulnerability to stress and addiction. And it seems that "stress has everything to do with addiction" (Maté, 2018, p. 196).

Chapter 4: Neuroscientific and biological dimensions of trauma and addiction

4.1 The structural and functional discussion

4.1.1 Introduction to this section

In this chapter I discuss the most relevant biological theory related to trauma and addiction. The objective is to discuss what I find useful in terms of what is going on *inside the body;* the neurobiology of the impact of trauma, pain and stress and how it contributes to the onset and development of addiction. This will comprise the 'Bio' aspect of the report in terms of my theoretical framework, the Bio-psycho-social paradigm. This is relevant because in order to treat addiction, I feel it is important to know what is going on in terms of the biology. We will come to understand how 'the early trauma of *not being seen' or unhealthy attachment* creates a susceptibility to substance use. This is important, as van der Kolk advises that 'the key to healing is understanding how the human organism works' (van der Kolk, 2014, p. 2).

The debate about what causes susceptibility and the consequences of early stress and trauma is complex. Science points to the idea that one possible outcome of early distress due to NCE, trauma and/or compromised attachment is abnormal brain development, which results in cognitive deficits that in turn seem to generate a propensity for substance use, an idea we will explore. Furthermore, chronic addiction (long term use), compromises the brain structure and functioning and this is likely the case for clients in treatment and the current state of the addict's brain. This 'brain state' has direct implications on treatment and should be taken into consideration. Whether these 'abnormalities' were caused by drugs or existed prior to drug use is irrelevant for treatment; how they impair cognitive functioning and behaviour and what can be done to repair it is what's important and there are ways to repair it, as we will find.

Long-term drug use seems to alter the brain's *chemical* makeup, in addition to its *anatomy and the physiological functioning*. The brain matter is lost (atrophy) and this impacts cognitive functioning and decision making (Maté, 2018, p. 141-142). However due to the limited scope of the report this cannot be discussed in any detail. The most frightening consequence of drug of abuse is the vulnerability to craving and relapse after many weeks or years of abstinence. The conundrum is that a dysfunctional brain, "the impaired organ of decision making…needs to initiate its own healing process…for recovery to occur" (Maté, 2018, p. 146).

4.1. 2 The impact of substances on neurotransmitters and the brain

We already know that one of the ingredients for addiction is a *drug with an addictive potential,* the other two parts are stress and a susceptible organism. Why is it that these drugs affect our brain in a way that causes us (humans) to want *more* of them and why/how do they damage our brains? 'Cocaine and other stimulant drugs (meth, caffeine) work because they greatly increase the amount of *Dopamine* (DA) available to cells in essential brain centres', according to Maté (Maté, 2018, p. 143). That sudden rise in the levels of DA (the ''feel good'' chemical), an important neurotransmitter necessary for ''motivation, incentive, energy', concentration, and stamina (Maté, 2018, p. 143) accounts for the elation, the high, at least in the beginning of the drug use. That initial high is chased throughout, but never realised.

In an animal study, it was found that those monkeys who became hardcore users of cocaine had reduced receptors prior to using, hence they sought out drugs that stimulate DA *and* chronic use reduced the number of DA receptors and so they needed more cocaine over time to 'feel good' (Maté, 2018, p. 143).

It can thus be deduced that the brains of chronic stimulant users may have fewer than normal DA receptors. The fewer DA receptors, the more the drug user must supply his brain with an artificial chemical to make up for the lack. Receptors are the molecule sites on neurons that receive the chemical messengers (neurotransmitters). Alcohol, like cocaine causes the brain to release extra DA. The presence of Cocaine in the 'synaptic space' between the neurons also inhibits the *re-uptake* of dopamine and Serotonin. So not only is the brain flooded with DA, but cocaine blocks the natural 'reuptake' mechanism and even more DA stays in the system and once the 'flood' is over, the neurotransmitter levels are dangerously low. A 2007 study showed how low Serotonin levels decreases the capacity of the person to control impulses and may causes feelings of depression[vii].

Serotonin, according to Maté, as a 'mood modulating chemical', also plays a key role in 'protecting against depression and addiction and not surprisingly is also bolstered by early nurturing relationships as well as caring or intimate adult relationships' (Maté, 2018, p. 190). Norepinephrine is another 'neurotransmitters involved in mood regulation', but if ineffectively transmitted can result in 'hyperactivity and fearfulness', which could promote addictive tendencies in an attempt to assuage these feelings (Maté, 2018, p. 190). Maternal deprivation can also affect the production of the hormone Oxytocin, which has to do with forming healthy relationships with others, attachment and bonding (Maté, 2018, p. 190).

A discussion on cortisol is important because stress induces high levels of *cortisol.* Cortisol is a stress hormone that 'agitates' the adrenalin glands to release *adrenalin*, a hormone that initiates an *action or a fear-based response* in preparation to fight, flee or freeze (FFF). It has been found that high levels of cortisol "damages the midbrain DA system and shrinks the brain structure that is important for memory and processing emotions" (Maté, 2018, p. 191). Thus, the *presence of cortisol can have a structural (physical) impact on the brain* that can have severe consequences for recovery. Which is why reducing stress responses and teaching self-soothing skills should be prioritised in early recovery, something I strongly advocate for. It has been found that children who experience stress in childhood tend to 'have chronic high cortisol levels through-out their lives'. They could become anxiety prone and thus more vulnerable to using substances that reduce anxiety. So, it can be said that a child's capacity to handle stress later on is "dependent on the relationship with their parents" says Maté (Maté, 2018, p. 191) and an inability to do so may lead to unhealthy ways of stress management.

The takeaway here is that a poor relationship with caregivers and lack of nurturing results in stress responses on the part of the child, the implications are that stress damages the brain in ways that prevent it from developing appropriately. Furthermore, according to a review of addiction neurobiology in a psychiatric journal *Recent understandings in the mechanisms of addiction*; "chronic use leads to changes in brain structure and function, when the state of our biology has changed, it naturally leads that our behaviour will change, this change in brain state explains why even of after years of abstinence cravings still exist" (Maté, 2018, p. 146)**.**

In this biological paradigm we can say that the brain becomes 'diseased' and the implications of the 'brain disease' manifests in the persons psychology and behaviour (Maté, 2018, p. 146); this is because ultimately it is the brain that is the organ of consciousness and that produces the psychological experience, which in turn has a direct influence on our behaviour. For instance, just as cancer generates a tumour which results in complications; a 'diseased brain' generates 'pathological thinking', which includes an impaired sense of self, a lack of self-awareness, compromised planning and decision-making capacities, poor emotional control and impulse regulation, volatile moods, erratic, irrational and destructive behaviours.

"Addiction is a psychosomatic (mind-body) solution (or adaptation) that a person gives to psychic pain" (Macdougall, 2002). This is where 'addiction' gets tricky because the 'organ necessary for healthy self-regulation and decision making is impaired' (Maté, 2018, p. 146) and because the pain that caused the organism to become dysfunctional in the first place, may still be very present, although suppressed; how then, is there any hope for recovery ? How can the 'addicted mind and diseased brain' of the addict be expected to choose what is healthy for it when it has been *relying on adaptations or solutions to ensure its psychic survival* in the only way it knows how, even though that is also obliterating its body and brain.

More importantly how can we enable enough safety for emotional expression when they've been keeping painful emotional release at bay for so long? How can we help the individual's brain to 'initiate its own healing' (Maté, 2018, p. 146). How can we teach the individual's brain new ways to soothe the pain and to regulate itself without it having to revert to external sources of modulating mood, feelings, sensations and experience? This is challenging because complex neuro-biological systems exist in the body that together all play key roles in the addiction process and in creating the addicted state. Let us now focus on the brain systems inside the brain impacted by stress and trauma and which are also implicated in addiction.

4.2 Brain systems impacted by trauma and implicated in addiction

"Beyond the immediate organismic release of the moment, drugs have the power to make the painful tolerable and the humdrum worth living for" (Maté, 2018, p. 31). Why and how do they wield this power? What is it that they do to the brain that 'seduces the organism and keeps it locked in cycle of addiction'? (Maté, 2018, p. 192) or more importantly, what are the 'biological and neurological mechanisms' that work together to create an addicted individual?' (Herman, M.A., & Roberto, M., 2015). We have learnt that it is not solely the drugs that cause addiction, instead it comes as a result of various interrelated relational, genetic, developmental, social, and biological (body) factors, hence the Bio-psycho-social approach.

We must learn to acknowledge that addiction is a form of self-medication to sooth stress responses and emotional pain; early childhood stress and trauma causes emotional pain and when unresolved (not healed) lingers into adulthood. It also inhibits the adult from adopting healthy stress responses and rational decision making. This is based on the idea that healthy brain development was sabotaged by their childhood traumatic experiences. The fact remains that not all people who experience childhood trauma/stress end up using drugs and some that don't, nevertheless become addicted. Why are some people more prone to using drugs long term, why do some people get addicted and others don't? It gets even more complicated when we consider the idea that our brains are somehow designed via receptors to receive these chemicals that "closely resemble our own brain chemicals" (Maté, 2018, p. 149).

Some pure and rigid scientific models would perhaps argue that addiction is dependent on the interactive psychoactive properties of the drugs and that a 'diseased', maladaptive brain is the result. Maté refers to addiction as a "constellation of behaviours that is provoked by a complex set of neurological AND emotional mechanisms that develop inside the person" (Maté, 2018, p. 149) *due to previous trauma or stress.* In the same way it cannot be said that the power of the substances lies only in its capacity to 'hijack' the neurotransmitter "receptor sites on our cells and interact with the brains intrinsic messaging system"(Maté, 2018, p. 149); just as it is not true that the only actions of these neurotransmitter circuits (e.g. DA and opioid) are for the organism to have a 'sufficient supply of 'feel good vibes'. Prof Jank Panksepp (affective neuroscience researcher) states that, "these circuits and systems must serve critical purpose other than promoting the vigorous intake of chemicals" (Maté, 2018, p. 149)**.**

The very brain-body systems that the drugs subvert are indeed 'primal survival systems' and when hijacked by chemicals for long enough begin to depend on the chemicals, as *the systems* can no longer function normally. In this way using drugs becomes a matter of 'survival' to the user. These same brain circuits in their normal, healthy functioning state play a critical role in our survival because it seems these systems are also responsible for our very basic *instinctive-survival drives.* These are: 'incentive, motivation, reward', 'survival of the fittest', physical 'fitness', libido or any necessary evolutionary adaptations to the environment through experiencing *emotions, feelings and sensations as cues* regarding possible rewards or threats in the environment, which we are conditioned to either move toward or away from. They are also responsible for the 'Fight, Flight, Freeze (FFF) responses that keep us alive in dangerous situations, that steer us towards pleasure (rewards) and away from pain (threats) and are also implicated in endogenous pain relief and procreative instincts' (Maté, 2018, p. 151)**.**

The 'opioid and DA neurotransmitter circuits', the 'limbic or emotional brain system', the 'self-regulatory impulse control' areas of the brain and the 'brain-body-stress response system' are the biological systems of interest here. Firstly, we have the *opioid system* which is responsible for endogenous (built in) pain relief and reward seeking (relief as reward), then the *Dopamine (DA) system* which regulates incentive-motivation functions (motivates us to seek reward). Then the *Self-regulation system* which resides in the medial prefrontal cortex (MPFC) that oversees 'impulse control, inhibition, self-awareness' (Maté, 2018, p. 150) *and* interoception and which usually exerts influence over the limbic system (emotional brain).

The *brain-body-stress response system* refers to the complex, dynamic relationship that exists between the mind, brain, the body and stress as it pertains to a challenging experience. This system has influence over all the other systems, as stress creates disharmony throughout the organism. It is the last two systems I am most concerned with and will discuss in more detail, as they are most implicated in mindful (Bodymind) and embodied treatment approaches.

1. Opioid system (pain relieving functions; emotional pain registers as physical pain)
2. Dopamine system (incentive-motivation functions; motivates us to seek rewards)
3. Self-regulating system (impulse control, inhibition, Self-awareness, interoception)
4. Brain- Body- Stress system (body is alerted of danger to avoid threats/pain/stress)

4.2.1 Opioid system

The opioid system is also known as the ‘reward and satisfaction circuit’ this is because the pain killing effects and 'warm fuzzy feeling of opioids' function as the reward chemicals for following through with the task that was *initiated by Dopamine*, physical exercise is an example. Opioid receptors are found throughout our body and it is these receptors that drugs like heroin and morphine attach to. This system releases endorphins, which are chemicals responsible for 'regulating our autonomic nervous system' and functions such as ‘sleep, digestion, heart rate, breathing’ (Maté, 2018, p. 151). More than only acting as pain relief, “endorphins have been described as the *molecules of emotion”* (Maté, 2018, p. 151).

Experiments have shown that endorphins are key in emotional bonding and attachment, in the absence of which, a monkey mommy will simply not care for her baby. Another important chemical is the hormone Oxytocin, which the brain manufactures in response to a flood of natural endorphins in order for us not to develop a tolerance to our own natural ‘painkillers’. Oxytocin is also referred to as the ‘love hormone’ and it initiates that warm fuzzy feeling when you feel loved[viii]. Furthermore, it also ‘induces labour and promotes the nurturing of the infant by the mother’ (Maté, 2018, p. 153). Dr Steven Dubofsky, a psychiatrist, conducted studies with Rhesus monkeys; the general findings were that “oxytocin trigger the presence of the mother, which releases a flood of endorphins in the baby and elicits secure attachment” (Maté, 2018, p. 198). Opioids are thus associated with the emotional presence of the mother.

Maté writes that "addiction to opioids thus represents a need for the most powerful human drives of love, attachment, nurturing and connection" (Maté, 2018, p. 154). The opioid system is responsible for quelling physical and emotional pain because they are both registered in the same part of the brain and both are ‘danger alarm systems’, e.g.: when a *mammal infant* is separated from their mother, the *emotional pain of the separation* triggers an internal alarm system. The *infant cries*, which induces a *release of oxytocin* in the mother and she naturally responds with physical proximity and nurturing; this in turn floods the infant’s brain with endorphins to ease the (emotional) pain (Maté, 2018, pp. 155-156). We can see where this is going; inappropriate or no responses by the mother towards the crying infant may result in *feelings of separation*, which can leave the child distressed and lacking the necessary ‘love chemical opioid cocktail’ and they may develop other (compulsive) self-soothing behaviours to compensate (Maté, 2018, p. 156). “Children who have not received the loving attention of adults are at greater risk of seeking chemical satisfaction later on in life” (Maté, 2018, p. 156)

4.2.2 Dopamine system

This system, also known as the 'incentive-motivation system' plays a significant role in addiction. (Maté, 2018, p. 159). Dopamine (DA) is the neurotransmitter that fuels its operation. Its functions are related to our basic survival in that it typically initiates activities related 'to food, security and sex', it also motivates us to seek those things that bring us safety, comfort and pleasure. It does this by offering the brain the 'feel good' flow of DA, which acts as the drive or "incentive for accomplishing survival related behaviour" such as finding food or finding a mate (Maté, 2018, p. 160), or something else we may 'need' for survival, which sadly in the case of addicts, their brains have been programmed to 'need' drugs for survival.

This is how physiological addiction to substances develops from recreational use, as the brain system learns from and responds to cues or triggers in the environment. Let's say for example that an individual took cocaine and it was initially a pleasurable experience. Their brain will associate cocaine using behaviour and everything related to it - *with pleasure.* Moreover, their brain will associate it with 'feeling good', *reducing stress* or temporarily 'forgetting' their problems. So, it may be the case that when a user experiences stress, their brain will respond with associations about using cocaine and a flow of DA will provide the *incentive-motivating energy* to follow through with the thrill-seeking behaviour. The *reward* is in accomplishing the 'task' and it is usually a flow of opioids (endorphins) that enable a feeling of relief /satisfaction.

Now, because the brain is constantly flooded with DA in chronic drug users, DA sites become inactive and the individual has reduced DA receptors, that is why feelings of depression, lethargy, apathy and irritability are associated with withdrawal. So then, can we not find ways to naturally boost DA in terms of a therapeutic approach; after all, that is what the brain is after, it is not really after the drug, but after the feelings of aliveness, energy, and motivation. It has been found that stressful experiences such as a lack of secure attachment reduces the number of opioid *and* DA receptors, which increases vulnerability to substance use (Maté, 2018, p. 189). Dubofsky found that 'in the opioid system, oxytocin should trigger the presence of the mother which in turn releases endorphins in the infant, *this reward association fosters* secure attachment (bonding). Thus*, the chemical incentive* of secure/safe attachment and emotional presence of the mother is a flood of DA (which is a matter of survival for the baby). Without this secure attachment DA circuits are compromised/ impaired (Maté, 2018, p. 198).

Consequently, DA circuits in the baby don't develop properly if the 'reward of the mother's loving presence' is not realised - a lack of attentive nurturing results in lack of DA receptors. In another study it was found that 'rats had impaired incentive-motivation systems if they were separated from their mothers early on' and 'impairment in these circuits are implicated in addiction, craving and relapse'; 'predictably in adulthood these maternally deprived animals exhibited a greater propensity to self-administer cocaine' (Maté, 2018, p. 189).

'Both the opioid (reward/satisfaction) circuits and the DA (incentive/motivation) circuits' are implicated in addictions and furthermore "play critical roles in regulating the emotional brain" (Maté, 2018, p. 163). DA and Opioid pathways lead to and from 'the limbic system' or the emotional brain centre, 'which is responsible for processing instinctual drives and associated emotions such as 'love, fear, pleasure, pain', which are also known as 'attachment and aversion drives' (Maté, 2018, p. 163). In a healthy brain these primal drives 'lead us towards something more 'positive and protective' and enable us to mobilise resources in order to move away from something potentially 'threatening' (Maté, 2018, p. 163). In an 'unhealthy' brain, one in which the emotional brain is impaired (PTSD/depression) or constantly being triggered by *false alarms* of 'threat' (anxiety) due to real or 'perceived stress', the mechanism of the incentive-reward system will be primed to *move away from pain*/stress and *towards pleasure* due to the memory of using substances. If the association between using drugs and stress relief or pleasure is strong enough and forged through repetition, addiction develops.

The emotional brain comprises the limbic system of instincts, desires and reactive impulses and acts as the *default mode* that kicks into operation when the frontal cortex is 'offline'. When this happens, we act impulsively and reactively and may do things we regret. Here I will argue that because the rational brain is compromised, we must return to the wisdom of the body and use a *bottom-up approach* instead of using a 'top down' cognitive approach. How does this *imbalance between the rational and emotional brain* create a vulnerability to using substances? 'When the faulty alarm system of the brain goes off inappropriately and without the capacity to Self-regulate, then "self-medicating through substances is our own desperate attempt to *regulate these two systems*" says van der Kolk (van der Kolk, 2014, p. 205). The traumatized person becomes 'fearful about the unwelcome physical sensations' that may arise when the irrational emotional brain takes charge, thus there is 'anticipation' of the 'stressful body responses' or and so it is easier to remain numb (van der Kolk, 2014, p. 208).

4.2.3 Self-regulating system - the OFC and PFC

Addiction disrupts the *self-regulating and impulse control circuits* in the brain, these pathways govern rational decision making and control or inhibit action and are essentially responsible for promoting or inhibiting choice and influencing behaviour. Associations with prior drug use initiates powerful incentive and motivation drives in the DA system and reward drives in the opioid system for following through with the *perceived* 'survival task'. Furthermore, as Maté puts it: “to add insult to injury, the circuits that would normally inhibit and control those mechanisms are also not functioning properly” (Maté, 2018, p. 167). So, not only is the brain’s ‘systems of survival’ hijacked in such a way that the organism falsely believes the only way it can ‘survive’ is by using the drugs that offer ‘relief', but the system that would normally mitigate inappropriate behaviour (the self-regulating system) is ‘out of order’. This is because *drug use damages* the parts of the brain necessary for making sound, rational decisions.

According to Joseph Ledoux (neuropsychologist), it is the duty of the *Pre-frontal cortex (PFC)* in a healthy person’s brain to “inhibit *inappropriate responses* rather than to produce the appropriate one” (Maté, 2018, p. 168), but prior to this, another process occurs. The *Orbitofrontal Cortex* (OFC) is responsible for ‘*evaluating the emotional value* of stimuli, people, places and experiences; it does this by evaluating stimuli ‘based on present information’ *and* ‘based on past experiences’ (Maté, 2018, p. 170). So, if the past experiences with a substance has been 'positive' in the way of it relieving pain or stress (present information), the *value* of this experience is archived as desirable. Higher emotional value equals *stronger attachment* to the behaviour and the less likely it is to be inhibited by the PFC.

Thus, in the blink of an eye, drug using is initiated, because the brain has been *programmed to value the relief that the behaviour brings* over the consequences of the actions, even if it is short term. A healthy PFC *responds* to the data received from the OFC and ‘reinforces (positive) behaviour according to its generated value system’ by inhibiting (reactive) impulses not in alignment with core values (Maté, 2018, pp. 169-171). In this way healthy, ‘appropriate’ responses are reinforced by way of inhibiting ‘negative’ responses. Inhibiting impulses through willpower seems an impossible task for addicts, considering all the odds seemingly stacked against them, but what exactly are meant by *impulses* and why is it necessary that we *inhibit* them? There is said to be a ‘half a second gap’ between the time the *impulse* occurs and when the *body becomes aware* of it as a *conscious urge’* (Maté, 2018, p. 291).

Impulses can be described as 'electrochemical reactions' that occur in the brain, it is also the way neurons talk to each other. The physical manifestations of the impulses are 'urges' and they present themselves in the body as uncomfortable sensations; a sudden pull, a drop or rise of energy, heart racing, hot /cold flushes, sweaty palms, fast shallow breath, holding of breath. Maté accounts for these sensations as the DA beginning to flow in preparation to drive, resolve and satisfy the 'biological survival impulses'; the DA is the 'incentive motivation chemical' that initiates 'seeking actions' (Maté, 2018, p. 291). There is a further lag in time of 'one fifth to one tenth of a second…in a *well-functioning cortex'*, from the time of the 'impulse becoming an urge, to the time the muscles begin to activate' (Maté, 2018, p. 291). This is the time it takes for the sympathetic nervous system to prepare the organism's muscular system with adrenalin to follow through with the necessary action that will satisfy the urge.

It is here, if one is mindful and aware of the nature of the urge (and its implications), that one can stop the body from this instinctive reactive behaviour. As we can see, this happens within the frame of half-a second, so there is time 'only in this briefest of intervals that the cortex can suppress behaviour it judges to be inappropriate' (Maté, 2018, p. 291). If it has been judged to be inappropriate by the OFC, but if the emotional value attached to the drug of choice is high, it will forgo being inhibited and the impulse to use substances will be acted on.

4.2.4 The self-regulating system, attachment and choice

The OFC is also said to have an influence on 'social and emotional behaviours that have to do with social *attachment*, bonding, love and relationships' (Maté, 2018, p. 170). *In a healthy brain*, it is typically responsible for our capacity to weigh up the *consequences* of our actions based on those programmed or conditioned value-based systems. The ability to weigh up consequences is compromised in addicts, primarily because the OFC is impaired. According to Maté it is 'due to the faulty programming of the self-regulating system' that addicts seem to "accept (and repeat) short term gain at the risk of long-term pain" (Maté, 2018, p. 171), due to the profound *emotional attachment* they have developed to their drug of choice. In this way the *attachment to substances* becomes a substitute for healthy human attachment that was either missing in the formative years or is currently missing. In the 'addicted brain the OFC lights up when thinking about the drug', as it would when thinking about a loved one (Maté, 2018, p. 172). One can begin to appreciate why positive Self-regulatory behaviour is challenging, because to the addicted brain, drug taking *has become the appropriate action*.

This is partly why recovery is so difficult and why so many people give up, because these substances may have been the only substitute for 'love' that this person has known and when they are required to forcibly abstain, challenging emotions come to the surface. Until that sense of internal safety and healthy connection to Self and others is restored, the addict will long for the 'lost love'. The therapeutic implication, that it is critical, in my opinion, is for the therapist to offer healthy, *alternative attachment solutions* that *overlay the emotional value patterns of using substances* to fulfil that deprived need. How? By facilitating experiences that foster connection to Self and others and offering Self-support tools that can ease pain and suffering naturally and produce positive emotional effects, generate life affirming values and make new associations to pain relief, comfort and safety possible. These could be dancing, drama, art, music, mindfulness, sharing, self-care and connecting with people.

It is important to offer activities that offer pleasure and produce a sense of accomplishment, in this way addicts can learn that there are other things in life that can offer relief or reward. These are the alternative ways to get the much-prized DA flowing in the system. If these new skills and behaviours are practised consistently, the brain will begin to *assimilate these new associations* of joy, peace and connectedness and the OFC will 'reprogram' towards *inhibiting* self-destructive responses, ones that are in opposition to these new emotional attachments and healthy behaviours. We need to retrain the brain to value that which is restorative. Only, once an *alternative way out of pain* is learnt, through new, corrective experiences, can the OFC be restored to baseline mode and inhibit destructive 'dread reward' impulses.

The 'addict's OFC is primed by the previous experiences of the drug's effects (in terms of it reducing stress and pain relief) and rather than inhibiting the drug seeking behaviour - it actually encourages it' (Maté, 2018, p. 174). The Self-regulating system (OFC and PFC) is faulty as a result of compromised early attachment and due to a lack of nurturing from primary caregivers; the relationship (parent / child) had low emotional value because it offered little or no soothing or relief. Consequently, it is unlikely that the addict is experiencing any healthy adult attachment because it is difficult to maintain functional relationships. Consistent drug taking ensures that the substances have a high emotional value; the addict eventually values the substances over everything else, 'food, health and relationships' (Maté, 2018, p. 174) . This is the battle of addiction and it is daunting because we (therapists) must try to help them restore their value systems in such a way that the *addict values themselves above all else*.

As we have learnt, the brain of the addict has come to value the substances over and above anything else, due to the “maladaptive attachment reward and incentive motivation systems that *are the* result, ultimately, of the frustration of emotional nourishment’” (Maté, 2018, p. 292)**.** When a child's needs for secure attachment and an adult's needs for intimacy are *unsatisfied*, they may turn to substitutes for rewards; those substances that produce the same effects or ‘dread rewards’ as Profesor Panksepp calls them (Maté, 2018, pp. 292-293) Panksepp goes on to say that "drug addictions wouldn't occur unless they were related to natural reward processes of some kind (pain or stress relief); those habits systems are so robust and once they form in the nervous system they will guide behaviour without free choice” (Maté, 2018, p. 292). This is because the 'free choice' to resist is related to impulse control and one can only resist urges and make different choices when one can control and inhibit the impulses. However, the PFC of the addict has been reprogrammed to *inhibit the urge to resist*, whereas in a healthy brain the impulses and urges for seeking ‘dread rewards’ would be inhibited. Only once we can get the PFC and OFC, which together makeup the *Self - regulating system*, back ‘online’ and in harmony, does choice become possible again.

When we are triggered by stressful situations that may or may not have associations with the original trauma, we revert back to seeing the world through the eyes of the distressed child and through the filter of the core beliefs associated with the trauma of 'not being seen, being unwanted, rejected, abandonment, feeling worthless'. As associations and memories are activated again, those dormant circuits, pathways and stories come back to life. They run the show and influence our psychological experiences in the present and thus also determine our behaviour. With the rational higher brain (PFC + OFC) being subjugated, the emotional brain activation causes a cascade of volatile and unpleasant emotional responses to emerge, the feelings become intolerable and without the normal Self-regulatory capacities to ‘own the emotional brain’ (van der Kolk, 2014, p. 129) it owns us, the ‘master becomes the slave’.

It is here that the individual finds themselves wanting to escape from these intolerable feelings and overwhelming emotions through whatever means available. In the person who is vulnerable to addiction (biological predisposition), this means to obliterate those emotions, to seek oblivion through substances, because feeling *those* feelings is not an option right now. For those of us who have a developed capacity for Self-regulation and its associated functions (self-soothing, impulse control, emotional regulation), it may just be a ‘walk in the park’.

4.3 The implications of early trauma/ stress, compromised attachment and mis-attunement

How can sufferers be expected to heal the body they hate? Van der Kolk explains that “trauma and abandonment disconnect people from their body as a source of pleasure and comfort or even as a part of themselves that needs care and nurturance” (van der Kolk, 2014, p. 305). Why and how does this happen? He argues that trauma survivors/addicts become completely disconnected from even the most basic biological needs of their body; "when we cannot rely on our bodies to signal safety warnings and instead feel chronically overwhelmed by physical stirrings, we lose the capacity to (trust) feel at home in our own skin and by extension the world" (van der Kolk, 2014, p. 305). It is also true that when we have not experienced safety (in our bodies) as a child, by virtue of our caregivers enabling us to feel safe, then it becomes difficult to feel safe in our bodies (our home) and so then the world can seem a cruel place.

The research seems to point to the idea that this 'sense of safety’, feelings of trust, acceptance and belonging and with that the ability to Self-regulate and Self-soothe is generated by appropriate nurturing and consistent interactions with caregivers early on. Van der Kolk states that the *single* most important factor in determining healthy ‘adult functioning’ was the way that parents engaged with their children (van der Kolk, 2014, p. 160). The ‘quality’ of the interaction informed the way the child regulated its own arousal (stress levels). Due to consistent caregiving the child would not likely live in a state of uncertainty (which induces stress) and thus in a state of chronic physiological arousal’ (van der Kolk, 2014, p. 161).

When they did experience stress, and if the parents generally soothed them, they were able to self-modulate, knowing that they would be cared for soon enough. For instance, they would perhaps calm down, knowing that even if mom didn’t change the nappy immediately, *she will do it* (certainty), based on previous experiences of mom seeing to needs. However, children with states of heightened arousal (not knowing *if or when* their needs will be met), “may not develop proper attunement of the *inhibitory (PFC) and excitatory (DA)* brain systems” (van der Kolk, 2014, p. 161), because they were not *attuned* to by their caregivers.

Attunement is fundamentally when the parents are 'tuned' into the *emotional needs* of the child; they are paying attention to and responding to those needs appropriately. Maté defines it as “being in tune with someone else’s emotional state” in a general sense and adds; it is when an “infant feels safe, understood, accepted and mirrored” (Maté, 2018, p. 238). Attunement in this sense seems vital at any age, but especially so in the early years, as it is so

important for ‘healthy brain development which ultimately results in healthy Self-regulation’ (Maté, 2018, p. 238). To quote Robert Frost, " brain development can be affected adversely, not only by bad stimulation but also by insufficient good stimulation” (Maté, 2018, p. 238). Winnicott expressed a similar sentiment; in that children acquire developmental deficits "by nothing happening, when something might profitably have happened" (Maté, 2018, p. 238).

Let’s say, for example, that an adult individual has had insufficient bonding with caregivers from a lack of attuned parenting, this was distressing for the child. This early stress is said to cause an inability to handle stress later on or *creates a low threshold for stress* and as a result they are unable to manage stress levels appropriately. Is it reasonable to expect them to function normally as adults if they were ignored, rejected, abandoned, deprived or worse abused by their caregivers; those who were supposed to love them unconditionally? "As long as their inner map of the world is based on trauma, abuse and neglect, people are likely to seek shortcuts to oblivion" (van der Kolk, 2014). Perhaps they have been programmed to anticipate rejection, abandonment, deprivations, and live in a perpetual state of mistrust and uncertainty as they are conditioned to believe that they are only worthy of those experiences. Here, there is no space for safety, self-nurturing or self-love and consciousness. It is survival.

In most instances, stress causes arousal and this leads to the desire to assuage the arousal with substances to suppress the agitated nervous system. The opposite is also true; people who are depressed tend to use stimulants to arouse themselves. What are the factors in childhood and later on that determine our levels of arousal and why does this survival system, the brain-body stress response system, break down when we are confronted with actual stress or stressors or memories of an incident or a traumatic experience? It is *this state of activation of the body* that often causes people to reach for the substances that seem to, at least temporarily, soothe the nervous system and alleviate associated negative emotions. Or, maybe, it makes one forget the past or escape the ‘unbearable present’, just for that moment.

I am of the opinion that managing addictive tendencies and compulsions has less to do with willpower, reason and judgement (cognitive faculties) than with being able to cope effectively with ‘arousal sensations’ when they arise in the body. I will argue that *embodiment* is the key to unlocking this. If we can help clients open pathways of communication between the body and mind then perhaps they will learn to trust their bodies and respond with loving kindness towards themselves, instead of reacting impulsively with self-loathing and self-sabotage.

4.4 Conceptualisation of the (brain) Body Stress System (BSS)

So far, we have covered the DA, the opioid/endorphin system and the Self-regulating system. The fourth system which can be out of balance in an addicted person is referred to as the 'body-stress system (BSS)'. This system is related to how we handle stressful situations or not. As we already know the 'release of endorphins and DA in the infant's brain is related to how happy, healthy and secure/safe the attachment to the caregiver is' (Maté, 2018, p. 188). The same goes for adults in intimate relationships. Stressful experiences and the lack of secure attachment reduces the number of opioid and DA receptors, in all ages, but when this happens in childhood, it increases vulnerability to substance use (Maté, 2018, p. 192).

According to Maté, animal studies show that "*social-emotional* stimulation is necessary for the growth of the nerve endings that release DA and for the growth of receptors to which DA needs to bind in order to do the work" (Maté, 2018, p. 189). DA offers us motivation and energy, confidence, focus. Reduced DA activity correlates with reduced motivation and focus, less energy, lower libido and higher anxiety and depression rates, and so a reduction in our ability to handle stress. Dr Bruce Perry, an expert in childhood trauma established in his research that 'if a child is exposed to early trauma or stressful conditions, they may be more 'reactive and impulsive'; more easily 'triggered, anxious and distressed' (Maté, 2018, p. 196).

Maté suggests that it is likely that people who suffer from anxiety or who 'become stressed easily' have a lower threshold for stress (Maté, 2018, p. 197). They may have "a brain [which is] pre-set to be easily triggered into a stress response [and] is highly likely to assign a high value to substances that provide short-term relief" (Maté, 2018, p. 198). This is also perhaps due to the fact that on a neurophysiological level, the 'stress hormone, cortisol, reduces DA efficiency and thus tends to reduce DA activity in the PFC' (Maté, 2018, p. 191). Less DA furthermore reduces the capacity of the PFC to function efficiently, because the DA pathway flows through the PFC and so there is less capacity to make rational decisions, to inhibit impulses or to Self-regulate. When DA activity decreases, the craving for drugs that enhance DA activation increases, if this person has had prior experiences with drugs as stress relieving (OFC), if the incentive motivation and reward pathway has been reset to seek and anticipate reward from substances instead of other things, then typically a stress response leads to relapse. "It (stress), increases opiate craving and use, and enhances the reward efficacy of drugs and provokes relapse to drug seeking and drug taking" (Maté, 2018, p. 198).

There appears to be a strong correlation between stress and addiction, as the presence of stress and its programmed associations with substances that reduce stress (and cortisol), appears to set off the 'impulse response' in the brain that leads to urges, cravings and relapse. If this is indeed the case “then how do we help to deactivate these defensive manoeuvres that the body does automatically to ensure the organisms survival?" asks van der Kolk (van der Kolk, 2014, p. 85). A formal definition was formulated at the National Institute of Health conference in the US in 1992: *stress* is a "state of disharmony or threatened homeostasis". A *stressor* is a threat, real or perceived that tends to disturb homeostasis" (Maté, 2018, p. 196).

Stressors could be something that is present or absent and illusory, which *threatens survival*. For example, Illness, a high crime rate, violence or poverty is a very 'present' stressor; ‘loss of job or partner, is an ‘absent’ stressor (a loss), but nevertheless, it is something which is seen as ‘necessary for survival’ (Maté, 2018, p. 196), physically and emotionally. Stress is many things, but according to the research the “three major universal factors that create stress responses in human beings are *uncertainty, lack of information, and loss of control”*. Maté adds to these “conflicts, that the organism is unable to handle and isolation from emotionally supportive relationships” (Maté, 2018, p. 198). Loneliness is a major contributor to distress.

Humans *respond to stressors* in the environment in different ways, but generally ‘a *stress response* is a natural, instinctive biological *reaction* made by the organism in an attempt to respond to a threat in the environment, *in order to survive'* (Maté, 2018, p. 196). It is also a way for the organism to Self-regulate and maintain a *'stable inner atmosphere, an internal balance'*, via the ‘up and down’ regulating of the sympathetic and parasympathic nervous systems. A body stress response is an attempt to return to ‘*homeostasis*’ (Maté, 2018, p. 196). It is a “dynamic chemical, physiological and psychological experience that is *mounted by the body”* in response to triggers in the environment and occurs when the ‘organism is confronted with demands that *exceed its coping mechanisms’* or internal resources (Maté, 2018, p. 196).

A false alarm/stress response is a response to is a perceived threat, for example paranoia, anxiety, emotional pain or flashbacks in PTSD. The body, whether confronted with a real threat (danger) or a *'false alarm'*(anxiety) 'release a discharge of ‘nervous’ energy throughout the nervous system along with the stress hormones cortisol and adrenalin' and these hormones 'affect every part of the body' in ways that temporarily impair normal functioning and impact homeostasis (Maté, 2018, p. 196). This in turn creates disharmony in the body.

Childhood stress can set the brain at a ‘low baseline level’; a lower stress threshold means less capacity to manage stress, due to impaired brain systems, brought on developmentally by a lack of a secure, nurturing, supportive attachment. "Now compare a person whose baseline arousal is normal with another whose is higher. Give them both alcohol and both will feel the intoxicating effects. The one who has the higher arousal (stress) will have the added effect of feeling pleasure from the relief of that stress", says Hans Selye, a prominent stress researcher (Maté, 2018, p. 175) and they will have a tendency to repeat the behaviour.

Addicts tend to live in a state of perpetual arousal, with heightened anxiety vs depressive states, hypervigilance and paranoia. This, together with poor coping mechanisms ‘completely overwhelms their capacity for self-regulation and for rational thought’ (Maté, 2018, p. 198). According to Maté*, the PFC goes ‘offline’* due to the autonomic nervous system activating the body into survival ‘fight, flight, freeze mode’; their ‘limbic system’ run the show and their ability to make ‘rational decisions, control impulses and self-regulation’ is impacted (Maté, 2018, p. 198). Fear is registered in the limbic system. This intensifies the challenge of learning how to regain control over the rational brain so that it is not ‘hijacked’ by the emotional brain.

Maté argues that 'addiction is a deeply ingrained response to stress, an attempt to self soothe' through substances and is ‘implicated in the onset of addiction’ (Maté, 2018, p. 198). Should recovery then, not focus more on relapse prevention by teaching stress management skills and healthy coping mechanisms? Perhaps, by guiding people toward finding ways to reduce stress through pleasurable activities such as mindfulness, art, drama and dancing, they may be less inclined to seek stress relief in other ways. I believe that, as Drama therapists, we are in a unique position to offer stress reduction and self-soothing strategies through the body.

The connection between stress and addiction is undeniable. As Maté says (2018, p. 268):

> “Almost any human being when overwhelmed by stress or powerful emotions, will act or react not from intention, but from (primal) mechanisms that are set deep in the brain (limbic) rather than being generated in the conscious and volitional segments of the cortex, and when we ‘act’ from a driven or triggered state we are not free”.

What is meant by this triggered or driven state and how does it come about? In the addicted mode, when an impulse and its associated physiological and psychological cravings signals in the brain, it is because the *stress alarm system* of the body is in 'alert to danger' mode.

It is however a false alarm because the body *is not actually in danger* (anxiety). When stress or pain triggers, the sympathetic nervous system teams up with the endocrine system and a flood of adrenaline and cortisol causes the body to respond with arousal symptoms such as increased heartrate, perspiration, shallow breathing, muscles tension, restricted blood flow. This is the body's way of preparing to evade the perceived threat, to fight, flee or freeze (FFF). Notice how the brain/PFC doesn't get involved again and once this process is initiated, the *body* follows through without asking questions, *because it believes its survival is at stake*. Depending on how the PFC is primed it will inhibit the behaviours that it evaluates as 'counter survival' and will permit the unhealthy behaviours that reduce stress/pain *in that moment*.

Intervention happens here; by retraining and teaching the brain and body more adaptive ways to reduce stress (substance use is a maladaptive response to stress), then perhaps alternative solutions to stress management may mitigate the problem. This is where I believe DT can play a role and I advocate for the idea that being embodied or acquiring the skills that encourage tuning into the body; 'body mindfulness' or 'embodied consciousness' may be the key to being able to transcend urges and cravings before they turn into actions with regretful results.

Perhaps then channelling that frustrated, emotionally charged energy into something else may be helpful, because the body is *preparing itself to move towards the reward*. It is here that I will argue for movement, gesture, voice, sound, mantra, breath work, something active, engaging and creative that distracts the brain long enough, until that impulse relaxes for the moment or until the valuing of substances has been overlaid by the valuing of more positive rewards. This is something that I believe should ideally be fostered in early recovery as it concerns creating 'body safety' and teaching *embodiment skill;* by embodiment skills I mean guiding the addict in ways to become versed in the communication of the Bodymind: i.e., to be able to interpret the signals from the body as stress responses and not life or death urges.

Maté asks; "How then [are we] to create the circumstances in which the possibility of freedom can take root and flourish" (Maté, 2018, p. 294). I believe the answer lies in what embodied therapies can offer, which is to allow for clients to be *in their bodies* and less in the 'diseased', brain-influenced *mind* governed by reactive, unconscious and automatic processes. If we can help them re/establish communication with the body, they may become more in tune with their body's needs and observe their own internal emotional landscape and may naturally begin the process of re-integration of the Bodymind unity that facilitates Self-healing.

4.5 The biology of trauma and stress - the emotional brain, triggers and false alarms

> "Trauma is much more than a story about something that happened long ago, the emotions and physical sensations that were imprinted during the trauma are experienced, *not as memories,* but as *disruptive physical reactions,* in the present", (van der Kolk, 2014, p. 204).

I have come to understand that it is not the trauma, but rather those 'disruptive physical sensations' that addicts want to escape from. Let's say there was legitimate abandonment by the mother; a certain kind of imprinting on the brain and the psyche occurs round this wounding. When one experiences a similar event (abandonment or perceived abandonment), then the 'old map' (and associated neural pathways) and the beliefs and emotions related to abandonment that were 'imprinted' long ago are *triggered*. Thus, something quite harmless seems to have effect on the brain and it is when one enters into a *triggered state,* coming from the unconscious activations of past programming, that susceptibility to using substances becomes problematic. When traumatic associations are triggered and we 'flip our lid' - the 'frontal lobes shut down' (van der Kolk, 2014, p. 167). That includes the part that is responsible for executive functioning (PFC+OFC), which is also the seat of the conscious mind and the thinking brain, responsible for planning, organising, logic, reasoning *and language.*

In addition, the 'thalamus also shuts down. It's job it is to process and integrate the raw data of incoming sensations' and then to send it to the rest of the brain for action, this causes the information from the immediate environment and our physical bodies to be excluded from our perception (van der Kolk, 2014, p. 167). The frontal lobe is connected to the hippocampus (memory*)* and they usually work together to help us "understand where feelings come from (the past) and why we feel the way we do"(van der Kolk, 2014, p. 204). In a healthy brain we understand that it is not this immediate situation, but something deeper that is being triggered. Now with the frontal lobes (thinking/ logic) 'offline', one cannot reason with the overwhelming feelings (that are associated with the initial abandonment). This is fuelled by unconscious associations from the past and the incoming data from the senses (the thalamus) which helps to orientate one in present time and space is lost; as the understanding that what happened then, is not happening now. All of this *creates a 'false alarm' stress response.*

Because the frontal lobe has shutdown, the situation analysis of the current experience is compromised and the 'data' only goes as far as the limbic system (emotion centre) and the *hypothalamus,* which sends signals to the sympathetic nervous system via the brainstem that travels to the adrenal glands and organs of the body to prepare itself for action (FFF). The activation of adrenalin and cortisol sends the body into reactive-survival mode that is 'beyond conscious control'. When this activation happens, some people are more prone to responding in a certain way. We can be hyper-aroused in preparation for fight or flight, becoming 'reactive and disorganized' (van der Kolk, 2014, p. 204) or we could be hypo-aroused (low arousal) when our bodies feel numb and we freeze. Either way, we are 'pushed outside our 'window of tolerance' or the 'range of optimal functioning' (van der Kolk, 2014, p. 205) and, adults who experienced stress in childhood have a 'lower window of tolerance' or a lower threshold for stress and are more prone to overreactions, anxiety and depressive symptoms.

Van der Kolk calls the emotional brain or the Amygdala (fear centre) the 'engine of traumatic reactions', which can often manifest as very real and often unbearable visceral or physical sensations. He describes them as "gut wrenching sensations, heart beating out of your chest, feelings of heartbreak, speaking with uptight voice, and the characteristic body movement that signify collapse, rigidity, rage or defensiveness" (van der Kolk, 2014, p. 204). "When the smoke detector (the amygdala) malfunctions you cannot trust the accuracy of your *perceptions*"; these are physical and mental constructs and not always real and so the responses are 'unpredictable, irrational, extreme or too passive' (van der Kolk, 2014, p. 265).

Moreover, traumatized people spend a lot of 'energy on early danger detection', to ward off and "brace against or neutralize *unwanted sensory experiences and* so at least half of all traumatized people dull their intolerable world with alcohol or drugs" says van der Kolk (van der Kolk, 2014, p. 266). However, these are necessary stress responses, because they do ultimately ensure our survival, if indeed there is a real threat and not a falsely perceived one. Not to discount real threats, someone in an abusive relationship for instance is always haunted by the actual threat of violence. However, the first difficulty that traumatized people face is that they are unable to modulate these responses at will (PFC function). Secondly, their bodies are prone to being locked into a 'state of chronic arousal' due to high levels of stress hormones and low brain balancing neurotransmitters to keep them on an 'even keel'.

The biological impact of trauma and stress doesn't end with abnormal changes in the brain and related stress responses; van der Kolk explains that as long as the body is flooded with stress hormones it may lead to very serious *physical health issues* such as inflammatory and autoimmune conditions including: 'headaches, muscle spasms, bowel issues' as well as 'irrational behaviours' (van der Kolk, 2014, p. 232), to name just a few. This is the basis for his argument that the body 'keeps the score' of trauma and stress; by this he means that the body becomes the container and the battlefield of the stress and pain. It also exemplifies the inextricable connection between the mind and the body. What is perceived in the mind or experienced as emotions (biochemical and energetic reactions) become manifest and locked into the dense matter of the physical body and can have very real physiological consequences.

In studies conducted by Candace Pert, a neuroscientist, it was found that emotions have a biological basis, the 'molecules of emotion' are literally stored in the cells of the body. Her research has come to prove that emotions are in fact 'biochemicals reactions' that travel throughout our body from cell to cell as information about the state of the organism and do not reside in the brain (van der Kolk, 2014, p. 105). Pert writes that these 'molecules of emotion' travel to each cell "where it orchestrates and drives the functions of our body and mind, which are so intimately interwoven that they are more truthfully referred to as the 'bodymind'" (van der Kolk, 2014, p. 105). According to Pert, emotions can get 'stuck in the body' and cause disruptions because the molecules cannot flow freely, causing lowered immunity and disease may set in. Thus, Pert confirms that the sensations we feel such as a "gut reactions, feeling queasy, someone being a pain in the neck and heartbreak, all speak to the constant passage and storage of emotions in the body's cells" (van der Kolk, 2014, p. 105).

Another study showed how expressing oneself can lead to increased immunity; in a written experiment, those students that wrote about their trauma visited the doctor less which correlated with wellbeing (van der Kolk, 2014, p. 238). Evidence like this points to how expressing oneself in a way that releases 'trapped emotions' can have a positive impact on health. In the same way a lack of expression can have pathological consequences. It is due to these manifestations that van der Kolk advocates for the facilitation of expressive processes that gently teach clients to learn to Self-regulate arousal prior to deep psycho-therapeutic work. This suggest that the key to healing is to feel and acknowledge our feelings; then, when we feel safe enough in our bodies, to express it through a medium that feels appropriate, be it art, dance, drama or through sharing, in order to begin to 'unblock' those stuck stories.

In my understanding this translates into teaching clients to gradually become more *embodied, more in touch with and attuned to the needs of their own bodies* and to bring more awareness to the body, so that they can begin to *feel* again. They must then slowly learn to 'tolerate' the sensations and feelings as they arise, a little bit longer, and not want to escape or numb them immediately, but instead becoming curious about the messages they hold. However, restoring Self-awareness is easier said than done, but is possible when we engage the right systems of the body. The body is the Self, Self-awareness and healing should start with the body, from the outside in, and from the bottom up, from the body to the mind. In so doing they may develop a more nurturing and intimate relationship with these 'bodies that they don't trust, these bodies that are their enemies, that betray them, these bodies they hate' and thus abuse with drugs and alcohol. Befriending the body is the key to healing addiction.

4.6 Self-awareness, interoception, nervous system and the Insula

In this section I hope to weave together some ideas, thoughts and theories on Self-awareness, interoception and the insula as well as the importance of presence and relaxation and the implications these have for addiction treatment in an embodied way. Feeling the feelings is important for healing. However, for those who suffer from trauma and addiction *feeling the feelings* are painful and are generally avoided at all costs; hence these people tend to be chronically shutdown, strung out, depressed and/or tend to numb out using substances when these 'uncomfortable' feelings arise. The capacity to *know what we are feeling* or to be Self-aware is severely compromised in addicts, this is evidenced in the way they neglect even the most basic biological needs, never mind emotional, soul or spiritual needs of the individual.

Let's explore the neuroscience of Self-awareness. The brain systems which are responsible for presence, mindfulness, or *Self-awareness* and is the *Medial Prefrontal Cortex (MPFC) and the Insula*, they form the Self-awareness and Self-regulating centre (van der Kolk, 2014, p. 275). This centre registers information in the form of feelings and physical sensations (from outside and inside the body) through a process called *interoception (inner - perception)* and generates our moment-to-moment state of Self-awareness (van der Kolk, 2014, p. 236). This system also contributes to our feeling of being embodied and thus of wellbeing. It is of interest because it is the MPFC that has the capacity to modulate 'our emotional brain' which enables us to 'mediate emotional regulation'. This is especially important for when the PFC goes offline during triggers but *there are ways* to circumvent the emotional brain and to activate the MPFC; "thus controlling impulses and reactions to stress" (van der Kolk, 2014, p. 284).

Interoception and 'body mindfulness' can be cultivated in embodied healing practices (DT). Science has shown that mindfulness can 'decrease activity in the Amygdala that triggers our emotional responses' (van der Kolk, 2014, p. 284), so it can be said that any activity that induces relaxation in a *conscious* way can be beneficial; including practices such as conscious breathwork, mindfulness and meditation in sessions are always valuable. Embodied healing arts practices such as DT and DMT have the added benefit of fostering interoception and of eliciting creativity. There are added benefits of working in an active, embodied way such as increased Heart Rate Variability and this "fluctuation of heart rate in response to breathing" (van der Kolk, 2014, p. 267) is also 'correlated with health, wellbeing and longevity', because "a major challenge in recovering from trauma (ergo addiction) remains being able to achieve a state of total *relaxation and safe surrender*" (van der Kolk, 2014, p. 271).

The same systems (MPFC, PFC & insula) impaired by trauma and addiction are the very ones "…that need to be accessed, befriended and reconciled" (van der Kolk, 2014, p. 236) and this I believe can be achieved through practices such as DT, that engage embodied presence and mindful awareness; approaches that cultivate interoception and encourage 'looking inward'. The theory is that 'enhanced interoception' increases activity in the MPFC, which leads to improved Self-awareness and thus an enhanced capacity to regulate impulses and emotions. It is also this interoceptive system which is chronically malfunctioning in the addicted person because their primary concern has to do with *escaping the present moment* in order to bypass or obliterate those sensations and feelings, that are mostly false alarms or flashbacks of their traumatic past. When it becomes too much, the thalamus shuts off, so no real-time sensory data is assimilated and they rely on past associations which are usually attached to trauma.

Why does trauma have such a lasting impact on the body, the brain and the conceptualization of Self? Van der Kolk likens trauma to a splinter that causes an infection; it is not so much the actual object (the splinter) that causes the suffering; 'rather it is the body's response (swelling and the pain) to the object that becomes the problem' (van der Kolk, 2014, p. 247). Freud and Breuer's conceptualization of trauma also relates it to a 'foreign body or entity' which continues to influence the organism 'long after its entry' (van der Kolk, 2014, p. 247). According to van der Kolk; "trauma interferes with proper functioning of the brain areas that "*manage and interpret experience* and create a robust *sense of Self*" (van der Kolk, 2014, p. 247). Fundamentally, the interoceptive system which is governed by the *Insula, integrates sensory information in the present* that accounts for our experiences of being Self-aware.

From the Latin, interoception means; *intero* (interior), *ception* (perceive); and is '*the capacity'* or a *Self-sensing ability* that allows one to cultivate a 'vital connection' (mind and body), for us to learn to correctly 'register and interpret our physical sensations'; without which we are unable to functionally 'navigate through life' (van der Kolk, 2014, p. 272). According to studies cited by van der Kolk; the insula, the part of the brain related to 'physical Self-awareness' (van der Kolk, 2014, p. 91), is damaged in traumatized people. This is significant as, "interoceptive awareness is key to identifying internal physiological processes related to *affective feeling (emotions)* and by so-doing, is a means of integrating bodily sensations, cognitive processes, and emotional feeling" says Craig A.D, neuroscientist (Cynthia & Hooven, 2018).

So, not only is the sensory data from the sense organs that read the external environment affected by trauma (thalamus shuts down), but the part of the brain that interprets data from *inside* the body and from the internal organs, th*e insula* is also compromised. This is the part of the brain, which in a healthy person generates a sense of being 'embodied' of being 'in their body'; being connected to, aware of and in control of their body (van der Kolk, 2014, p. 247). Through brain imaging studies it has been found that in traumatised people, this brain system (the insula) experiences abnormal activation and they perceive mixed messages from their body and as a result their BSS may be triggered inappropriately and then addicts use.

A person can for instance, 'just always feel on edge or unable to focus' or 'ungrounded', this is because "these *powerful feelings* are generated deep inside the brain and cannot be eliminated by reasoning or thinking", or, for that matter only by talking (van der Kolk, 2014, p. 247). Van der Kolk argues that only once these systems are repaired through a *bottom up approach;* the kind of approach that helps us to repair the insula and interoceptive system, so that the body can transmit data to the brain effectively and allow us to feel embodied; only *then* can we " know what we feel and take action to protect ourselves or make healthy , life affirming choices*"* (van der Kolk, 2014, p. 247) (Bottom up implies from the body to the brain).

To accept and know our body is to know our Self. Van der Kolk advises that "the full story can only be told after those structures are repaired, after the 'no-body' becomes a some *Body*" (van der Kolk, 2014, p. 247) and this involves getting to *know and trust our bodies*. This idea of returning to the body is supported by science; Dr Damasio, a renowned neuroscientist concurs; "one of the clearest lessons from neuroscience is that our sense of ourselves (Self) is anchored in a vital connection to our bodies" (1999) (van der Kolk, 2014, p. 272).

Chapter 5: Embodied approaches to the 'problem' of dis-embodiment

5.1 Mind-body unity - context, background and significance

Our bodies change our minds

Our minds change our behaviour

And our behaviour can change our outcomes.

- Amy Cuddy - (Belling, 2018, p. 33)

In this chapter, I aim to provide a general analysis of the value of embodied and creative therapies with regard to how they could serve to mediate the impact of trauma, alleviate the manifestations of trauma/stress in the body, mitigate the automatic survival stress responses, and by so doing increase the person's own capacity to Self-regulate, thus reducing the need to use toxic substances to modulate mood. The purpose of this section is to highlight why an integrative, holistic and embodied approach to treatment is more compelling than one that does not engage the body. The concepts that I *overview of* are: mind-body bridging, body mindfulness, posture, gesture, Drama & theatre, Drama Therapy (DT), dance therapy (DMT) and authentic movement in relation to addiction. Thus, I attempt to bridge the role they can play in healing addictions in terms of their capacity to establish a reconnection with the body.

I advocate for an embodied way of working and a transference of 'body-mindful' skills, which if developed with the client in a safe, loving therapeutic context have the potential to foster transformative qualities in the individual that may offer them the necessary personal tools (such as self-awareness and self-regulation), motivation and resilience to transcend addictive tendencies and impulses by bringing them back into communication with their bodies and their authentic Selves. The evidence points to a general a movement towards "'bringing the body back' in the conceptualization of Self". This phenomenon seems to be progressively endorsed by 'philosophy, anthropology, neuroscience, biology, psychology and neuroscience' (Price & Hooven, 2018, p.2), all with the underlying assumption that "the body and mind interact in complex ways to influence each other" (Price & Hooven, 2018, p.2).

The position of this report *as it relates to therapeutic intervention for clients with SUD,* is that the *whole being* (Self = body *and* mind) of the client, needs to be engaged and addressed, in line with the premise that the 'mind and body interact and profoundly influence each other'. The nature of this assumption with regards to pathology of any kind but especially as it relates to trauma and addiction, fundamentally calls for a *holistic, integrated therapeutic approach*. What is being foregrounded is the importance of having (whole) Self-awareness or *body-mindfulness* in developing 'recovery resilience' because "awareness of how your body feels is an important part of (one's) ability to reduce cravings and urges" and thus preventing relapse (Block, Block, du Plessis & Landward, 2016, p. 17). One cannot begin the critical work of healing the underlying trauma until the 'bodymind' (unitary whole) is in a more 'relaxed, natural functioning state' ('the true Self') and the client is not "constantly hijacked by unwelcome stress responses, cravings and urges" (Block, et al, 2016, p. 3).

In the book, *Mindbody workbook for addiction*, the authors map out what they call 'Mind-body bridging methods'. These are processes that use the sensory intelligences of the body helping it to become calm, relaxed and grounded. To better tolerate and manage cravings, urges and impulses without the use of substances, they advocate for starting with '*befriending your body'* (Block, et al, 2016, p. 31). This is what I think Drama Therapy also encourages, by way of guiding the client into becoming more playful and *in body,* they may be less inclined to harm it. For people who are dissociated from their bodies, developing their 'embodiment senses' and body intelligences are skills that take time, practice and guidance. My hunch is that as Drama Therapists, we are in a unique position to offer, in creative mind-body bridging type processes, a return to a *re-covered* state of wholeness, with embodiment as the bridge.

Mind-body bridging strategies assume that the mind and body are a unitary whole. Moreover, the client is not seen as 'damaged' or 'in need of fixing', but rather as a "*complete whole* person who is always connected to a wellspring of healing, goodness and wisdom" where they can access their 'natural functioning' and thus a more embodied state, whilst understanding that it is just the overactive BSS and emotional brain, or what is also termed the 'I- system' (I-identity), that has taken over in the addicted mode (Block, et al, 2016, p. 3). The I-system is also known as the *default mode network*. The addicted mode is one way of being, and *when dominant*, becomes chronic addiction; healing is about finding ways to switch this mode off, to calm the overactive I-system by getting the mind, brain and body to communicate in a functional, integrated way by allowing it to access *other ways of being*.

Dr David Simon states that "healing is the process of re-establishing the integration between body, mind and spirit, creating opportunities for the return of the memory of wholeness" (Belling, 2018, p. 137). The Self in a Dramatherapeutic context refers to the '*whole Self*' and DT implements a unique approach to working with mind and body or 'discovering the Self', soul aspects included - *through the body* (Pearson and Stevens, 1996). Sassenfeld quotes Jung (1988); he suggests, with his concept of the *body as a symbol for the Self*, that "the body is merely the visibility of the soul (the psyche), and the soul is the psychological experience of the body, so it is really one and the same thing" (Sassenfeld, 2008, p. 6). Donald Winnicott, in Pearson, emphasizes the importance of the 'activation of the connection to the body' and *feeling* as opposed to 'thinking and talking about emotions'. Experiencing "the true Self is bound up with bodily aliveness" says Winnicott (Pearson, 2013, p. 51).

Mara Sidoli, a Jungian analyst, explains that a trauma creates 'a disconnection from reality', a 'type of disembodiment' (Sidoli, 1989). Van der Kolk refers to a 'loss of Self' in the moment of shock. Sidoli emphasizes the importance of healing the split from the pain-body via the 'integration of Self - body and psyche' through 'embodied presencing' and through feeling the pain, as it is the body which becomes the 'container of pain' (Sidoli, 1989). In the case of addiction healing the 'split from the pain-body' (dissociation) by integrating parts of Self is essential, as it is the a(void)ance created by this split that we try to (full) fill. We need to get closer to the pain, to acknowledge and befriend it; suffering comes from trying to avoid it.

Michael Greenwood argues that *dis-ease* is a consequence of 'dissociation from the body', manifesting as the "*repression* of undesirable psychic (unconscious) content which is then sustained by the suppression (avoidance) of the pain-body" (Greenwood, 2004). This 'suppression of the pain', in the case of addiction, is perpetuated by repeatedly using drugs to numb feelings or escape the 'intolerable' present moment. Greenwood goes on to say that "there is an overflow of the unconscious into the body which becomes 'a container' of the pain and when not released (expressed) results in disease" (Greenwood, 2004). If we consider the disease model of addiction, then this becomes very relevant. In the case of therapies such as DT, creative, embodied expression offers opportunities for *real* emotional release, in the way it offers clients the 'permission' and space to *express* and thus to release (to communicate through body) pent up emotions in a visceral, authentic way. Releasing emotions is important, it is when the body holds onto negative emotions that 'tension accumulates and tension is highly correlated with relapse' (Block, et al, 2016, p. 31).

It thus seems that the psychological (emotions included) dimension has a profound impact on the physiology of the body (and vice versa) as seen in the way of painful or negative emotions, when supressed making us physically ill. As Candace Pert (neuroscientist) says, "your mind is in every cell of your body" (Belling, 2018, p. 168) and thus exerts influence. It is possible that our physiology generates subjective psychological experiences and complexities, the 'ingredients' of which are said to be influenced by our social environment early on. The *quality* of our interaction with others, initiates and fosters or inhibits neural pathway growth and this later determines our psychological constitution in the way of not only an impaired sense of Self, but also impacting our core beliefs and values that inform our lifelong behaviour.

However, this return to the 'body wisdom' (own Self-healing capacities) is not innovative practice, it is more like a *re*turning to, a *re*membering and *re*covering of our natural authentic, essential state. I do not believe that our ancestors had to contend to with stress, anxiety, fear, trauma and addiction in the way that we do. It seems to be an all pervasive, globalised, post-industrial, 'Western' phenomenon of epidemic proportions, that I believe is symptomatic of the 'wound of separation'- from the natural world, from God/spirit/source, from our own true natures, from indigenous, natural medicine and from each other. Daniel Siegal writes:

> "Recent scientific research has supported what contemplative practices have known for thousands of years - that opening awareness to the signals of the body is a window to wisdom; this wisdom, this source of deep knowing from our internal world, also connects us with empathy for the internal world of others" (Belling, 2018, p. IX).

There seems to be a 'revolution' in the healing arts and sciences (only in that science is catching up with ancient traditional wisdom) and a new paradigm is emerging. The notion confirms the best kept secret of medicine, that "the body heals itself if we create the right conditions and stop doing the things (stress) that created the sickness in the first place" (Dr. Michael Greger Gudb, nutritionist) and also that the body can heal the mind and vice versa if the right tools and skills are applied. There is still resistance from those that benefit from the binary, reductionist way of thinking (Clinical spaces and pharmaceutical industry), because if we had to harness our own innate *Self-healing capacities* 'they' would go out of business. The pharmaceutical corporations are a multibillion-dollar complex and the statistics for death and illness by 'medicine' is staggering. It is no wonder that disease proliferates in the way it does.

This 'new way', which has always been central to traditional and indigenous medicines, has been suppressed for so long, primarily because "the medical community mistrust[s] new paradigms and resist moving outside the boundaries of narrowly defined scientific ideology that separates mind from body, human beings from their lifetime environments" says Maté (Maté, 2018, p. 296). However, this appears to be changing because the 'new' (neuro and quantum) science is proving otherwise. Van der Kolk and Maté are amongst those leading the way; "if mind-brain-visceral (body) communication is the royal road to emotional regulation (wellbeing), this demands a radical shift in our therapeutic assumptions" (van der Kolk, 2014). It will also demand a shift in consciousness and medical policies; one that requires acknowledging 'indigenous and alterative ways' of healing. Maté goes on to say that "for true healing to occur - mind and body are [must be] seen as inseparable" (Maté, 2018, p. 296).

Van der Kolk reminds us that pragmatic and effective therapeutic intervention concerns both a top down (mind to body) AND a bottom up (body to mind) approach that necessitates a 'bidirectional communication between body and mind' (van der Kolk, 2014, p. 76). He also notes that this 'new' approach is "transforming our understanding of trauma and recovery", and thus by implication it holds the same possibility for addiction and recovery (van der Kolk, 2014, p. 76). It is the assumption that the mind and body are always communicating that is important here, and that bodily sensations are 'voices or messages trying to be heard' (Belling, 2018, p. IX). Belling states that "many studies have shown that the *brain reads the body* (it's stories) in order to organise (its) thinking, feeling and behaviour" (Belling, 2018, p. IX). Hypothetically, if the body 'keeps the score'; "if the memory of trauma is encoded in the viscera" (van der Kolk, 2014), then the body stores all memories, experiences and associations with no discernment. If the experiences were negative, chances are the stories the body 'remembers' and that the brain 'reads' are negative and we act out (behave) from these stories, that were programmed early on by experience which then became our core beliefs.

What Van der Kolk suggests is that information from the environment and from experiences (such as traumatic incidents or repeated ways of being treated by others) becomes embodied by way of being embedded into the brain circuitry of the emotional brain. This influences how we think and feel about ourselves and how we perceive, respond to and engage with the world and others. Let me demonstrate how physiology influences the psychological paradigm; For example, a child who was consistently treated as 'unwanted' will learn to think they are not worthy of attention or worthless - generating lifelong beliefs about unworthiness of Self.

This is because the brain circuits that encoded these experiences became more active and are 'grooved deeper' and strengthened each time the belief is confirmed. This creates a ‘filter through which they will see and experience the world’ (van der Kolk, 2014, p. 129), and will behave as if it is true. What happens next, in my experience, is that one will continue to manifest an external reality that confirms one’s core beliefs, until these limiting beliefs are 'reprogrammed' and neural circuits are 'deleted' or 'rewired'. This will continue until they have new, contradicting, life affirming experiences - change the physiology - change the mind.

Healing addiction is partly about finding ways to manage stress and about developing Self-awareness. It is about learning to Self-regulate and then ultimately to find the strength and courage to process the trauma. It is also a process of letting go of the old Self, the ‘person’ we are in addicted mode, when we act from the ‘I-identity or default mode network’ with its self-defeating and destructive beliefs, values and behaviours. Healing also comes from birthing a new integrated, wholesome Self. The latter can partly be achieved through having corrective, remediating experiences. I would go as far as saying that embodied therapies can offer all of the above. Why is it important to change these old maps, to transform these brain circuits?

As we discovered, the rational brain’s job is to override the emotional brain, however, when we are in a state of arousal or stress, the rational brain tends to 'bomb out' and then we are prone to “activating old maps and following their directions”, forgetting that these maps where often created by negative and painful experiences (van der Kolk, 2014, p. 129). What they have encoded, doesn’t usually result in a positive outcome. To begin to heal addiction, one must develop the capacity to tolerate those uncomfortable feelings that arise in the body; “only after learning to bear with what is going on inside, can we start to befriend it”, instead of reaching for whatever numbs out (van der Kolk, 2014, p. 129) and ‘takes away the pain’.

It is *my* assumption that mind-body integration through creative, expressive processes *may* be able to guide the client towards befriending their bodies; teaching them to tune into, listen to and develop a relationship with and support the natural Self-healing intelligence of the body, helping it to release the grip of addiction, to find freedom. DT also offers the possibilities of simulating remediating experiences that can ‘rewrite those old maps’; new stories - new life. "When you can learn to become friends with your body, and feel at home in your own skin again, you can experience a deeply fulfilling vibrant and present life" (Belling, 2018).

5.2 The body is the bridge - overview of the building blocks of embodiment

> *You can be fully in charge of your life only if you can acknowledge the reality of your body, in all its visceral dimensions* - Bessel van Der Kolk

We have explored how stress and trauma is implicated in addiction, now let's examine some practical possibilities for addressing it. Van der Kolk offers some suggestions:

> "finding ways to feel *calm and focused* (by not using substances), *learning to maintain calm* in response to events, images, thoughts, sensations, sounds, smells that remind you of the past (or other triggers), finding a way to be fully *involved in the present* and *engaged with the people around you*" (van der Kolk, 2014, pp. 203 -204).

I believe that embodied therapies such as DT and DMT can offer opportunities for clients to develop and practice these skills, although this can only be possible if the therapist is mindful of and includes the 'building blocks' necessary to do such. By building blocks, I mean those skills, tools, practices or qualities that have been shown to improve body mindfulness (which enhances interoception) that in turn improves Self-awareness and then Self-regulation**.** There seems to be "compelling (scientific) evidence demonstrating links between poor or disrupted awareness of sensory information or interoceptive awareness, and difficulties with emotion regulation" (Price and Hooven, 2018, p 1). Thus, engaging in *embodied activities* that are known to develop interoceptive abilities and Self-awareness have the potential to ultimately improve Self-regulation and in so doing to mitigate the impact of *body stress responses*.

This is important because by virtue of becoming embodied or more 'body mindful', the client is better able to check in with and know their bodies and thus be able to discern the difference between real feelings and needs and false alarms (i.e.: anxiety) and then by applying the 'embodiment' skills and using the *body as the bridge* to access the MPFC (conscious/cognitive) they will be able to, in that split second gap between impulse, urge and action, perhaps choose a different outcome and not default to the emotional brain's reactive response. Why this emphasis on emotional regulation and practices that potentially offer 'interoceptive strategies' with mind-body-integration at its core? According to Price and Hooven;

> "effective emotion regulation involves the ability to accurately *detect and evaluate* (that is interoception at work) cues related to physiological reactions (BSS) to stressful events accompanied by *appropriate regulation strategies* (embodied responses) that temper and influence the emotional response" (Price & Hooven, 2018, p.1).

Interoception is the ability to 'detect' and observe what is happening internally but that is only the initial part of addressing 'the problem'. As Price and Hooven suggests above, emotional regulation only comes about through 'appropriate regulation strategies' that firstly "involve a coherent relationship with the self, specifically effective communication between body, mind, and feelings"; (Price & Hooven, 2018, p. 1). 'Strategies' implies that Self-regulation is does not come naturally, especially for addicted persons. As van der Kolk suggests, we 'need to find ways' or 'learn to remain calm' and centred in response to triggers, as this is one of the key factors in preventing relapse. These 'strategies'/tools develop the client's capacity to Self-regulate and need to be taught to and practised by the client in order to enhance their ability to tune into, listen to and care for the needs of the body - the Self.

In the section that follows I aim to illustrate why it is that a creative, embodied therapeutic approach seems appropriate for facilitating addiction recovery, by highlighting their value. I am also emphasizing here that although an embodied way of working may be a beneficial supplement to a recovery program, it should not stand in the place of trauma counselling or psychotherapy, though it may be especially useful in the early stage of recovery for reasons I have mentioned. My objective is to generate a deeper understanding of the nature and the value of embodiment; what it is about being connected to the body that offers healing, and how it can contribute to body-mind integration which seems to be essential to wholeness and wellness. I am thus steering away from discussing specific techniques, methods or strategies. I thought it more valuable to overview practices that may serve as 'strategies' or 'building blocks' that foster embodiment (mind-body integration) and which in turn support wellbeing, which we as (Drama Therapists) could include if the need arises for the client or group.

Drama Therapists are uniquely positioned in that we are not limited by any one approach or technique and can use any number of tools/ strategies creatively to meet the needs of the client. Furthermore, due to the creative, client-centred nature of DT, these 'strategies' can be woven into more 'traditional' DT sessions suited to the client's needs either as warmups in the beginning such as mind-body bridging and body-mindfulness, meditation, posture, gesture, breathing exercises, conscious touch, voice, sound, rhythm or in closing. Considering the extent to which addicts are dissociated from their bodies, it may be helpful to apply diverse approaches, as each of these 'building blocks' carry a unique 'medicine' (therapeutic value) and could be powerful in combination. Not only can they support the experiential therapeutic process but can be taught as take-home skills to assist in relapse prevention.

5.2.1 Body-mindfulness and presence

Natural forces within us are the true healers of disease – Hippocrates

Noa Belling, a somatic movement therapist states that "your body is a living expression of your mind; your body is a resource that can support you in many ways" (Belling, 2018, p. 1). Although that is true, one's body can only serve as a resourcing entity or be an ally in one's healing journey, if one relinquishes the idea of the body as 'utilitarian' (as an object). Only by coming into a conscious relationship with the body, can one regain control of it. Thus body-mindfulness is the skill of accessing a desired state of being with and through the body.

Why the emphasis on the body and embodiment for managing stress or developing recovery resilience. It is *mindful embodiment* that promotes the mind- body integration necessary for healing. To be mindful means to bring attention to what is going on inside and outside of yourself in the present moment; whilst meditation can sometimes be limited to what surfaces from the unconscious in the mind and is often done seated, with eyes closed. Body-mindfulness skills facilitate the capacity to be more mindfully embodied (in body) and thus it enables the client to use the body as a tool and medium of awareness. It is the ability to be aware of being aware, to be conscious of consciousness, to be present with each and every thought, sensation, emotion, feeling and experience as it arises in the body, in the mind, and in one's reality, and to be curious about it and playful towards it, without judgment or fear.

This is no easy task, even for a healthy person and even less so for people that suffer. People who have experienced trauma, and addicts, may find it difficult to be present with themselves or 'to be with' what arises in the body or mind in the moment, without judging or fearing it and/or wanting to escape from it. It is both the uncomfortable stress responses experienced in the body and the stories from the past or 'negative past thinking', as Dr Joe Dispenza calls it, that they want to escape from through substances, using anything that will distract from feeling and ruminating. As Eckart Tolle says in '*The power of now'* (2004), "If your mind carries a heavy burden of the past (trauma), you will experience more of the same (you will manifest that reality repeatedly), the *past* perpetuates itself through a lack of *presence*". So, it can be said that by practising presence or present mindedness, being 'in the now', one can mitigate the psychological impact of (thinking about the) trauma that happened in the past.

Presence (which is the 'state of being present') is important for accessing Self-awareness and Self-knowledge and for becoming in tune with the body so that you can begin to read the signals or the messages from bodily sensations and feelings. Mindful-body skills can offer this. It is not only a matter of feeling what is arising, but of bringing awareness to it and trying to make sense of it, to be able to decipher the subtle language of the body; to ask the body what it is communicating…and to hear the body respond in return. Noa Belling introduces a few practices for improving *body* awareness or mindfulness. She conceptualised 'mindful body moments' and 'mindful body processes', which are short exercises in which you let your attention or "awareness dive into your body" (Belling, 2018, p. 6) for a few moments, instead of it being focused on something external or 'in your head'. This is used to "increase your mind-body connectedness" (Belling, 2018, p. 4) and that gives one more of a "sense of how the mind and body live together and how the one influences the other" (Belling, 2018, p. 6).

DT can also offer creative, playful and exploratory ways to develop mindful embodiment and the skills related to it. I believe that by including mindful embodiment exercises and processes, it can promote "resilience, optimal brain functioning and heart led living and healing" (Belling, 2018, p. 4) amongst other well-being benefits. Furthermore, mindful embodiment promotes mind-body connection and offers ways to resource the Self internally. Belling advocates for this approach in that it has the potential to increase our "stress threshold and [ability to] bounce back from adversity…to move into a less reactive and more resilient and adaptable way of being" without relying on external support from substances and in this way we can develop recovery resilience (Belling, 2018, p. 50).

5.2.2 Posture and gesture

Posture and gesture are important components of embodiment and are fundamental skills in DT. To portray a character one needs to be able to change one's posture and apply gesture, but, in and of themselves, they do have potential therapeutic qualities. What I discovered was fascinating and it also has implications for why DT (which is enacting different states of being) can be so effective in transforming the way we feel about ourselves. It has been proven that you can 'hack your mood or state of being' by changing your posture. Dr Richard Petty (Prof. of psychology of Ohio state university) has found that the brain cannot tell the difference between a natural state or an induced (adopted/ enacted) state (Belling, 2018, pp. 33-34).

Body posture and memory are also intimately related, according to the findings of Professor Erik Peper (San Francisco State University) (Belling, 2018, p. 34). By assuming a confident posture, the body remembers a time when it felt positive, it has associated that posture with positivity and personal power according Belling (Belling, 2018, p.34). The opposite is also true; when you are slouched the *body remembers* a time when you were defeated, hopeless and powerless. Scientific studies have found that adopting a 'power posture' has the potential to change even the bio-chemistry of the body by lowering cortisol levels (stress hormone), according to social psychologist Amy Cuddy (Belling, 2018, p. 35). The key is to 'visualise and hold' this new position consciously for long enough so that the brain can register this new state of being, apparently it takes 30 seconds (Belling, 2018, p. 5). Furthermore, it was found that different body postures can even increase DA and serotonin (Belling, 2018, pp. 36-39).

As much as a 'power posture' can alleviate stress and induce motivation and confidence and some for soothing the nervous system (child's pose), the opposite is also true; slumping and dragging your feet can induce a sense of 'depression'. Simulating gestures or expressions carry the same benefits; by choosing to smile, the brain may be tricked into believing you are 'happy'. Smiling can release feel good hormones like serotonin, endorphins and DA, reducing the stress hormone cortisol and increasing relaxation (Belling, 2018, p. 34). These are all the things we want for our clients because it may help them regain control over an overactive BSS and achieve the accompanying state of being of calm, without being hijacked by their bodies.

5.3. The value of Drama, theatre, rhythm and song

"Collective movement and music create a *larger context for our lives, a meaning beyond* our individual fate" (van der Kolk, 2014, p. 333). Van der Kolk had this insight after he connected with the healing power of the collective ritual of movement, song, music and rhythm when he visited South Africa and experienced an African mourning (grief) ceremony. After this experience he noted that these are the ways in which human beings 'bind together' (connect) and intuitively, collectively and *traditionally* 'instil a sense of hope and courage' (van der Kolk, 2014, p. 333). This is perhaps because Theatre and ritual is a way for people come together to 'create a larger context for their lives, a meaning beyond their fate' through depicting characters and telling stories of overcoming obstacles and transcending suffering. Stories of survival, truth, hope and love are told and enacted, so that those not only experiencing it through embodiment, but those witnessing it too, can be all the better for it.

There is something very powerful, healing and magical about collective ritual/theatre and ceremonies and since the beginning of time humans have used these forms to work through their “deepest existential fears and personal and collective traumas” (van der Kolk, 2014, p. 331). The assumption is that these communal, ritualistic and performative events alleviate suffering and reduce ‘stress’ and thus the manifestations of stress, i.e. disease/addictions. It is not a coincidence that Shamanic practices worldwide still use ritual/theatre, rhythm, drum, song, dance and movement as part of their repertoire of healing practices.

Although we as DT practitioners understand this to be intuitively and experientially true, van der Kolk admits there is ‘surprisingly little research’ on how collective "ceremonies (ritual/ theatre) affect the mind and brain and how they prevent or alleviate trauma" (van der Kolk, 2014, p. 331). Fortunately, there is some research (which I intend on discussing) on how drama, theatre (and DT) can offer relief from trauma, stress and suffering from addiction. This is not only because they require of one to be embodied, and teach skills in that regard, but also because of the mysterious healing qualities inherent in collective ritual.

“Therapy and theatre are intuition at work, they are the opposite of research…what makes (this) therapy effective is deep *subjective resonance* and that deep sense of truth and veracity that lives in the body” says Tina Packer, author of the Power of embodied intuition (van der Kolk, 2014, p. 345). Subjective experience ‘feels’ and *the body knows* what science *cannot* know or measure. Unfortunately, this is also why it is common practice for evidenced based methods to be implemented in recovery centres, for the most part. If drama and theatre were a standard part of ‘rehab’ programs, I am certain we would see better recovery results. What makes theatre so powerful is that by engaging in it, one can access that eternal, archetypal ‘veracity that lives in the body’. Universal truths about human nature, life, death and love, brought into the here and now - *through the body* - to be integrated into one’s life.

The way I imagine this works is that during the process of assuming a character, the ego or personality and all its complexes, neurosis and addictions fall away and in this way space is created for something new to be experienced and another way of being can be assimilated. As Maté says all ‘addicts ultimately want, is to be in the non-craving state, in the non-addicted mode’; as long as they are using, the cravings are gone, so they continue to use (Maté, 2018, p. 107). I think that engaging in drama can perhaps emulate this non craving state, because for that moment you are not yourself, you can be who or whatever you choose to be.

Van Der Kolk had a personal experience of this process and advocated for the therapeutic use of drama and theatre when his son recovered from a 'mysterious illness' after joining a theatre group. He writes about how his son had become a “new embodied version of himself” and that theatre contributed to his healing and later success. He attributes this to the idea that “our relationship to our body is in direct proportion to our sense of agency in the world” (van der Kolk, 2014, p. 331). When you develop *agency or* control over your body, you can expand your sense of agency in your reality. If creative embodiment in the ‘dramatic space’ is the authentic expression of what IS in the here and now of the character, whilst simultaneously being an expression of an aspect of unconscious processes, then, perhaps we can say that if one’s ‘embodiment skills’ can improve in the dramatic space, so one’s capacity to embody oneself more authentically and express one’s truth in life can improve.

Van der Kolk continues: "Unlike his experiences with numerous therapists, theatre gave him a chance to deeply and physically experience what it was like to be *someone other than* the learning disabled boy, the oversensitive boy” (van der Kolk, 2014, p. 331). By embodying a persona or taking on a life affirming role and feeling what it feels like to be in a positive, life affirming state, even if it is 'acting', the body can assimilate it into its own ‘beingness’. For the duration of the drama you are not sick, or a trauma victim or an addict. You create yourself anew and may discover that you prefer this life orientated state of being. With practice, one can take that feeling into life and access it again, because the body remembers. "Acting is the opposite of dissociation, of being out of your body, of making yourself disappear; it is the experience of using your body to take your place in life"; to make yourself visible and experience an elevated state that inspires you to be *more of that* (van der Kolk, 2014, p. 331).

Besides offering alternative and remediating experiences through simulating experiences different from our own realities, and having opportunities to 'try on’ and 'act out' diverse roles, states of being or archetypes, or stress relief through communal enjoyment and a sense of group belonging, theatre and drama can offer safe spaces in which we can authentically *express ourselves through the enactment. If we were to generically conceptualize how this would work, it would be* a process of expressing and projecting the negative emotions or disowned material outwards and into an object, a symbol or piece of work, which creates distance between us and it. We are released from the strangle-hold it has over us. By *feeling* our feelings, they lose the power they have over us; through expression, we find freedom.

"Traumatised people in particular are afraid to feel their emotions as emotions lead to a loss of control" (van der Kolk, 2014, p. 335). The BSS is activated, and because emotional regulation is poor in traumatised/addicted people, they struggle to restore homeostasis, and are thus prone to substance use and generally do whatever they can to keep the lid on their emotions and numb out; or are volatile, easily angered and resort to panic, aggression or violence. Either way, there seems to be an imbalance in emotional expression; it is either too inhibited or overwhelming. In my experience, Drama and theatre seem to have the capacity to 'open up' the body, to transcend pretences, to release inhibition and allow for the natural, healthy expression of emotions to occur. In so doing one can break through the emotional-energetic blockages that the trauma created. "It was like megatons of energy and tension just left my body…pathways opened up for expression that had been blocked by this baby boy holding his breath, and being so afraid that it was going to die"; recounts one of van der Kolk's clients in his book after experiencing the power of drama (van der Kolk, 2014, p. 353).

The premise of this work is that one cannot dive straight in with either drama or theatre processes when working with addicted clients and that beginning with the body is paramount The way I would work if I were to adopt these strategies of an embodied way of working through addiction is that it would be a gradual development over time of encountering and befriending the body leading up to perhaps a performative aspect using drama. What drama and theatre can potentially offer is the 'directed' and contained experiencing of emotions, but only after enabling clients to feel safe in their bodies first, through engaging in mindful-body processes, gentle movement and drama warmup activities to aid the development of their Self-awareness, interoceptive, Self-regulatory and 'embodiment skills' or capacities.

Then later, by moving to creating or offering facilitated and guided dramatic processes in which they have the opportunity to *embody*, that is, to enact and dramatize different roles or personas, they will perhaps feel empowered enough to project their emotions through/ in a narrative or a role. By so doing they give voice to their own emotions and express their truth and essence whilst being held safely in the *'container' of the role or character*, which *can hold the energy of the emotional expression* (emotions equal energy in motion). "As a culture we are trained to cut ourselves off from the truth of what we are feeling" (van der Kolk, 2014, p. 335). By numbing those feelings through substances or avoiding by other means, they are suppressed and go deeper into the unconscious, the body. This is then manifested in disease.

Encouraging gradual 'Safety' and ‘reciprocity’ is very important here, because overwhelming and uncontained emotions are triggers for maladaptive behaviour. "Being able to feel safe with other people defines mental health…safe connections are fundamental to meaningful and satisfying lives" (van der Kolk, 2014, p. 352). The concepts of reciprocity and *attunemen*t are similar; it is to be truly heard and seen by others and in return to hear and see others. Because addicts generally had poorly attuned relationships with caregivers and most likely in adult relationships too, fostering qualities of reciprocity, resonance, attunement and trust is thus potentially healing. The assumption is that drama, theatre and DT can offer the nurturing of these qualities and these are remediating experiences that addicts may well need.

Traumatised, and thus by implication addicted people are generally “inhibited, out of tune, uncoordinated, purposeless, or too hyper-aroused to notice what is going on around them” (never mind inside them), writes van der Kolk (van der Kolk, 2014, p. 335). He goes on to say that they are “easily triggered and *rely on action (s),* rather than words to discharge their feelings" (van der Kolk, 2014, p. 335). This makes the argument for *embodied action* even more compelling; because when the BSS initiates, common in the addicted mode, the *muscles activate* and the body *naturally wants to move* to discharge the energy (instinct is to FFF).

Thus van der Kolk suggests that "there is nothing as helpful as moving your muscles and doing something that demands focused attention" (van der Kolk, 2014, p. 335). If someone is susceptible to being ‘triggered’, dramatic action in a role can offer them ‘permission’ to discharge the energy. Immersing in a role gives them an opportunity for physical movement and directs focused attention to the action (so they get ‘out of their head’), whilst expressing the emotions that may otherwise have been directed into something destructive. Addiction deprives people *temporarily* of the qualities of “self-regulation, self-awareness and *communication*” (van der Kolk, 2014, p. 353). Engaging in drama and theatre can promote these qualities and help to foster engagement, reciprocity, connection and communication within the safety of a group of people who have most likely endured a similar kind of suffering.

By 'purpose-driven’ van der Kolk implies ‘exercises that offer and promote predictability, consistency and have clear expectations’ (van der Kolk, 2014, p. 353). This is important because uncertainty, lack of clarity and doubt causes stress and must be avoided. Van der Kolk mentions a few well known drama games to create a 'safe space' in which inhibitions can drop and people can feel more secure in their bodies, thus developing trust in the group.

It is suggested when working with traumatised clients, that choosing techniques which *encourage empathy and emotional intelligence,* in addition to practices that 'strengthen the watchtower' (MPFC) (van der Kolk, 2014) are useful. Drama and theatre implicitly develop empathy and there are ways to promote Self-awareness via mind-body bridging exercises; the practices already mentioned have this capacity to help harmonize the nervous system, whilst integrating mind and body. Another way is to teach clients to consciously redirect awareness to the body, so that they are able to recognize and name physical sensations: what does my anxiety feel like, where do I feel it, what happens when I feel anxiety, how do I listen to the feedback; what is my body's intuitive healthy response and how can I follow it.

Van der Kolk writes that "competence is the best defence against the helplessness of trauma" (van der Kolk, 2014, p. 336). The exercises one would do prior to developing a piece of theatre are about *building trust* in the therapist, in themselves, in their bodies, in the group, so that they can drop their (self) judgement and fear of being judged (shame). In addition to waking up dormant competencies such as confidence, imagination, creativity and spontaneity, drama and DT also creates a sense of belonging and community. "People who feel safe and meaningfully connected to others have little reason to squander their lives doing drugs" (van der Kolk, 2014, p. 353). Safety, trust, agency and meaning are cornerstones of wellbeing. If these key elements are achieved in the therapeutic space, the work of healing can begin.

5.4. The value of Dramatherapy (to facilitate mind-body integration and recovery resilience)

In the preceding section we briefly explored the value of drama and theatre, in this section I am examining the value of the medium of Drama Therapy (DT), which not only makes use of the transformative qualities of drama but applies them with therapeutic intention. I want to start by creating some context for how DT fits into the bigger picture and then follow with a conceptual overview of expressive or creative Arts Therapies, as they relate to addiction treatment. I include reviews of DT & Psycho-drama interventions with addicted population.

What these approaches have in common is that they employ the body or *embodied expression* as a fundamental therapeutic mechanism. These approaches are not explicitly concerned with mind-body integration but seeing as the *whole* Self is engaged, my assumption is mind-body integration is an implicit therapeutic outcome. As opposed to 'talk'-psychotherapy which is cognitive and language-based and doesn't account for the body's role in the healing process.

I also include a brief discussion on embodiment as a Drama-therapeutic principle and if we consider the idea that to be embodied (in body) is a skill or quality that one can be guided to 'acquire' and that it seems to be 'lacking' in traumatised and addicted people, then the intention here is to advocate for DT as the most comprehensive form to facilitate the fostering of 'embodiment skill's that may effectively contribute to recovery resilience.

"Creative art therapies (CATS) are guided by a therapist, who is able to move a client through multiple *forms of expression*, be it art, dance, music, or drama" (Rodgers, 2017) *and* these are therapeutic practices in their own right. Through the expressive forms, specialised therapists work with clients to help them "examine feelings, emotion, thoughts, and somatic sensations present in the body and through the *form* they find insight, meaning and release" (Rodgers, 2017). As a therapist in the field, Rodgers attests to the fact that "for an individual struggling with an addiction, there is often a 'disconnect' between mind and body, thoughts and feelings" (Rodgers, 2017). She highlights the value of CATS as it supports the "processing of difficult thoughts and emotions that have become 'stuck' in the body" (Rodgers, 2017).

'Expressive' therapies, which are common practice as *complimentary therapies* in addiction recovery centres, are beneficial but often to limited to weekly sessions. Some outcomes listed on a Treatment Solutions site are an 'enhanced ability to cope with stress, a reduction in pain, depression and anxiety symptoms, increased resilience, self-esteem life and satisfaction'[ix]. These are also potential benefits of being more in touch with the needs of the body.

David Read Johnson, an arts therapist, contemplates the comparative nature of the world of substances with CATS, he says ; "a paradox seems to exist, seeing as they seem to, in fact, share close ties" (Johnson, 1990). Both involve a curiosity, a seeking, encounters with shadow and pain, delving into the numinous and transcendent realms and "both have been hailed as methods of opening the 'doors of perception'" (Aldous Huxley, 1954) (Johnson, 1990). Bearing in mind this enigmatic connection between creativity and substance induced states, as well as the tendency for addicts to be creative, sensitive people; can "creative expression become a replacement for addiction and substances, as a healthy life affirming alternative?" asks Read Johnson (Johnson, 1990). Whilst he does acknowledge the success of programs such as AA[x] and NA[xi], he also highlights the differences between traditional recovery programs and CATS and asks how these embodied and creative therapies "which stimulate an *inner-directed* state, fit in with the traditional approaches?" (Johnson, 1990).

He claims that the AA or NA 'approach is directed *away from the Self,* with a focus on the disease and on the present and does not examine the past' (Johnson, 1990). Nor, he says do they really seem to acknowledge or address underlying trauma, pain or stress. They are concerned with a 'search for a higher power', *external* to the individual and do not explore the 'resources available in the Self' (Johnson, 1990). As a result, there is an "avoidance of emotional and bodily arousal" and "naming feelings but not examining them"(Johnson, 1990). Read Johnson adds that there is a tendency to "to distract the addict from the Self and focus on other people and the 'battle with the disease'" and a caveat that "introspection leads to self-preoccupation which leads to relapse" is commonplace in AA and NA (Johnson, 1990).

This is in contrast to embodied, creative approaches (DT) with its remarkably different intentions, such as: tuning into the internal psychic landscape, 'staying and moving with what is present', 'stimulating emotional arousal, and bodily sensations' in order to feel and work through them (Johnson, 1990). This *'inner directed'* approach that promotes Self-awareness, interoception and Self-regulation which appear to be the inherent outcomes of embodied, creative therapies is *the* reason why they are effective. It is now clearer to me that trauma sufferers and addicts *lack the capacity to look inwards*, because it is so painful; hence the desire to numb out, or 'escape' the body and present time awareness though substances. The faculties that are impaired are the very ones that need to be developed for healing to occur; this is an oversight on the part of the 'traditional' therapies and recovery programs as they rely too heavily on top down methods and on external stimuli for change.

In the *Sesame approach to* DT, 'INsight and *Self*-discovery, when entering a role in a story', is directly related to the experience of 'embodying' (Pearson, 2013, pp. 49-50). 'Embodying' as it is applied in DT, "involves the way in which the *Self is realised* in and through the body" says Phil Jones, an pioneer of Drama Therapy (Jones, 1996, p. 113). He describes *embodiment* as "the ways in which someone's body relates to their identity" and concerns how "clients communicate consciously and unconsciously with and through their body" in relation to the 'other' (Jones, 1996, p. 113). Embodiment is concerned with the outcome of '*knowing* with the body' *or* Self-awareness (Jones, 1996, p. 256). It is a way of 'dramatizing the body'; by projecting the internal landscape onto the body using drama one can explore the problem in a *distanced way.* It "concerns the way in which a client physically 'encounters and expresses material' in the 'here and now' of a dramatic presentation" says Jones (Jones, 1996, p. 114).

Di Cooper, a Sesame-approach Drama Therapist, emphasizes the concept of *wholeness* as the 'interconnectivity between body, mind and Self' and recognizes the importance of embodied work in healing the Self. The *whole Self* in a Drama therapeutic context, includes 'mind, body and Soul' (Pearson, 1996, p. 25). She draws inspiration from the concept of 'the body as a symbol for the Self' (Jungian concept) in terms of "the way that one treat's or views one's body is a representation of how one feels about the Self" and vice versa; "our body is our Self, we cannot run or hide from it, although we often do" and wish to (Pearson, 1996, p. 25). The implication for recovery is that, perhaps by working in a *bottom up* way, by 'beginning with the body' (Pearson, 1996, p. 26), as DT implicitly does; our Self-concept can improve, this may foster the value of the Self and engagement in healthy activities that add value to the Self.

Lynn Johnson suggests that Creative Arts Therapists possess the 'ideal modalities to aid clients in the journey of Self-discovery through creative expression' (Johnson, 1990, p. 300). As it is through the *awareness of Self* that clients can learn to recognize, to acknowledge, to feel, and be present with and express their internal landscape. So it is through "sharing parts of themselves", both the dark/destructive and the light/creative parts "that [it can become] transformative" says Johnson (Johnson, 1990, p. 300). In addition to CATS allowing for personal transformation through the expression of repressed, unconscious content coming from 'viscera' (what is unconscious manifests in the body), DT can also hold up a mirror of the Self and in this way Self-awareness is also cultivated. It is through the projective work, that we can reveal and express what is hidden in the psyche, so as to witness in an objective way.,

Lynn Johnson describes her work as an Arts therapist by saying she is acts as a guide that 'encourages her patients struggling with addictions to share themselves creatively with her through dance, drama, poetry and music'. She adds that "miracles happen when addicts open themselves up and discover the beauty of their inner nature" (Johnson, 1990, p. 299). DT is often done in groups, we tend to learn *about* ourselves by being with others and *how* to be with others by engaging in group activities that encourage teamwork, sharing, reciprocity and emotional resonance. Positive, *remediating attunement* can occur by virtue of being in a free, non-judgemental space with others that share a similar journey. *Positive attunement* is healing because it is related to the 'social positive' qualities of *seeing* others and being *seen* and hearing and being heard, having emotional needs met and vice versa. *Social connection* is critical for recovery according to Jodie Gale, drama therapist. She observes that the sense of disconnection from Self' *and from others*, drives and reinforces addiction' (Gale, 2012).

Drama Therapist, Tanya Newman, completed a qualitative multi-case study titled *Creating the role: how Drama Therapy can assist in re/creating an identity with recovering addicts*. She argues that the value of the therapeutic application of role and role play is demonstrated in its capacity to "identify, express and begin to reconfigure roles (the *role* of the *addict*) and sub-roles (the liar, victim, failure, thief)" (Newman, 2017). This validates the notion that DT can support addicts in their process of 'releasing' the role of the addict or victim and instead help them step into a new way of being. This stepping into and anchoring of a *new role* in the body is vital. She also found that DT can foster resilience and self-worth (Newman, 2017).

In a study using a combination of the ARTA narrative framework and DT interventions, it was shown that the aims of higher self-esteem and increased Self-worth, produces a reduction in recreational drug and increases relapse prevention. 'A New Beginning - A Drama Therapy group for participants with co-occurring mental illness and substance abuse in a mental health setting'; was a study done by Joanna Jaaniste (2008). She used people's life stories (narrative approach) and DT principals or processes such as embodiment, projection, improvisation, role and role-reversal to achieve the outcomes, which were said to be more "efficacious than any at a 'regular' addiction treatment clinic in Holland", according to van der Haar (2004). In that study most 'study participants who were followed up with post-study, self-identified as being confident and addiction-free' (Jaaniste, 2008). This is ground-breaking. The intervention was designed using the ARTA narrative framework with the aim of facilitating Self-awareness of substance use patterns and to foster hope for recovery. She used a biographical approach based on Lievegoed's (1988) 'seven-year periods of human development' (Jaaniste, 2008).

In reference to Jaaniste's study outcomes, Self- awareness is one of the cornerstones of recovery because in the addicted mode the client is deeply rooted in unconscious, automated behaviour, by virtue of being controlled by the emotional brain, which is due to the MPFC being offline. The outcomes of 'higher self-esteem, increased self-worth and reduced intake of recreational drug use' are a direct consequence of increased Self-awareness and expanded consciousness; this may indicate that a bottom-up approach is effective in activating the PFC. In addition, the more Self-awareness is practiced, the more the PFC comes back 'on-line' and the less grip that the urges and impulses of the emotional brain have over the client. The MPFC is responsible for the self-regulatory capacities and these also improve over time, so even if stressors and accompanying urges are present, the client has increased *recovery resilience*; more capacity to regulate emotional responses and to inhibit urges and impulses.

Tian Dayton, a psychodrama practitioner, tells in her book, 'Trauma and Addiction- Ending the Cycle of Pain through Emotional Literacy' (2000), of her extensive research and work with trauma and addiction and how Psychodrama (which is a form of embodied sociometric group psychotherapy) can be used in the treatment of both. Her premise is that psychodrama, as a "method of therapy that engages the body through role play", can be more effective in accessing and integrating trauma-related memories, "since trauma responses are stored in the body" (Dayton, 2000). The 'structures' as she calls the 'remediative' processes that develop in a Psychodrama session, facilitate the possibility of forming new *virtual memories.*

The therapist, together with the client and the other group members assume roles associated with the traumatic event and with dramatic strategies and guided facilitation, the dynamics of the event are 'allowed to' play out naturally. This may provide opportunities for the client to take an action that was thwarted at the time of the trauma i.e. if they couldn't run away at the time, they can run away now and thus re-create the 'ending to the story' imaginatively and assimilate this experience into a new 'virtual memory'. This is in addition to providing the remediating visceral and sensory experiences of being 'seen, cradled and supported' by group members, who have perhaps taken on the caregiver/mother role as an example. This can perhaps serve as 'antidotes to memories of hurt and betrayal' (van der Kolk, 2014, p. 308).

It makes sense to me that by creating simulated experiences that mimic positive attunement and healthy attachment, the negative experiences of not being attended to in childhood can be remediated to an extent. To heal, people need to become "viscerally familiar with realities that directly contradict and remediate the static feelings of the frozen or panicked Self' and replace these with "sensations rooted in safety and connection" (van der Kolk, 2014, p. 308). I believe that DT can offer 'visceral' experiences that contradict these helpless states. The premise is that with 'structures', role play and dramatic presentations one "can reweave the past…we cannot undo what had happened but we can create new emotional scenarios, intense and real enough to *counter* some of the old ones" (van der Kolk, 2014, p. 308). Dramatic enactment and role play can offer something powerful in the way of remediating experiences because in psychodrama and in DT sessions it is possible to recreate, re-imagine, re-image, and rework the 'scene/story' of the trauma with the intention of transforming the long-term outcome 'for the better'. Van der Kolk talks about how *trauma results* when actions and sovereignty were thwarted, in a moment of insult, injury or offence, when one could *not get away* and felt trapped, helpless, victimised and forced against one's will.

It is the energy of the FFF response that was not allowed to naturally direct the actions of the instinctual survival system and so one could not in that moment fight or flee. This is the 'energy' of trauma that gets trapped in the body and, according to van der Kolk, for the rest of their lives they want to fight, flee or freeze. So, in a dramatic enactment one can play an "active role in liberating oneself or the child" (van der Kolk, 2014, p. 290). This trapped energy can be lifted and the events re-imagined to allow for a 'positive' outcome; "the resolution of the trauma was the result of her ability to access her imagination and rework the scenes in which she had become frozen so long ago…helpless passivity was replaced by self-led action" (van der Kolk, 2014, p. 290). By freeing the 'trapped child' in the drama, one is metaphorically freeing the archetype or the *role* of the wounded child - trapped in the psyche. By declaring sovereignty through action, one may be released from the urges to numb out. If the wounded child is no longer stuck in a frozen state, we can love them back to life and by offering positive experiences to addicts, then perhaps they can learn to love themselves back to life.

5.5 The value of Dance (and movement therapy- DMT) and natural conscious movement

Dance is the hidden language of the soul - Martha Graham

I felt it would be an oversight to leave dance and *movement* out of this discussion. Christine Caldwell, *body centred and movement* psychotherapist, conceptualizes addiction from a somatic/body perspective as 'anything that our bodies do compulsively' and as a 'program that compels us to move toward something that we or the brain have been conditioned to believe has rewarded us in the past'; she calls it a "programmed movement behaviour of approach" (Caldwell, 1996, p. 17). The 'movement' of addiction is characterised by expansion and contraction, we compulsively move towards something that is not ourselves, to escape 'ourselves', whilst, at the same time, moving further away from ourselves. Furthermore, she describes it as the act of 'poisoning the body, the body we hate' (Caldwell, 1996, p. 19).

Rebecca Milliken, a dance-movement therapist describes Dance and movement Therapy or DMT as the ideal 'nonverbal, body-oriented approach' that may offer the potential of addressing the 'lack of body awareness' in the addict (Milliken, 1990, p. 309), implying that where there is a lack of self-awareness one cannot Self-regulate. Additionally, it may offer "a highly effective and unique approach to dealing with the addict's characteristic *resistance, denial, isolation, and low self-esteem*" (Milliken, 1990, p. 309).

Caroline Carey, a 'movement medicine' practitioner, confirms that by using substances one becomes 'out of body' or disembodied, dissociated from true feelings and sensations; "without the body we do not exist and leaving the body can be called dissociation" (Carey, 2014). She adds that "the more painful the feelings are, the more we will make attempts to disassociate and disconnect through numbing out (with substances) or impulsive escaping or compulsive distractions" (Carey, 2014). Her work with embodied healing practices, affirms that there is a real need for people with addictions "to be embodied or to be 'in body', and *with the senses* begin to feel the dormant, locked away feelings and fears and to be present with everything that needs to be expressed as it emerges in the body" (Carey, 2014:20).

The embodied experience enables an 'awake presence' or body mindfulness, which is the key to healing. When this awakening occurs, the individual is able to bring awareness not only to the sensations in their bodies, but also to the feelings and emotions they many have been avoiding as well as to their behaviour. When there is a consciousness of behaviour, it can begin to change. This is because dance has a positive effect on the brain; "Dance has a number of neuroprotective benefits and can be regarded as an effective, non-traditional treatment option. It strengthens social ties and emotional integration, culminating in a higher quality of life for patients", says writer Rachel DuVivier. According to her research she found that that dancing "cultivates interaction between different areas of the brain. In turn, these forged connections stimulate a 'mind-body' relationship that works in a regenerative way…it does this by increasing neuroplasticity; forming new connections with other neurons via dopamine receptors", writes DuVivier in her online article, Dancing for Dopamine[xii].

In an article from the New York Times online, the author suggests that 'dance can support the Insula' as it is said to help regulate the Insula functions. This is important because it is the Insula that is "responsible for the feeling of being embodied which can lead to greater Self and emotional regulation" writes Sandra Blakeslee[xiii]. When it is working properly, we feel embodied - this is perhaps because the job of the Insula is to enhance the sensory experience and to 'integrate song, dance, music, sensations and empathy' into our lived experience. Blakeslee goes on to explain how the Insula "helps us to feel what it feels like to be human" and describes it as having an overlooked potential for addiction treatment. The Insula is said to be the *centre of mind-body integration;* a kind of 'way station' or 'receiving' zone that "reads the physiological state of the entire body and generates subjective feelings that can bring about *actions*"[xiv] according to research done by Sandra Blakeslee.

Dopamine is the 'feel good' chemical that addicts desire, as their own DA activity is insufficient due to trauma and stress. *Accomplishing novel tasks such as learning a dance sequence can* serve as a reward and can be an alternative way to increase DA. However, learning dance sequences is DMT's focus, rather it is about "following the *natural, authentic movement or action of the body* in a conscious, self-observing way and being witness to what is unfolding in the present moment of the dance" (Belling, 2018, p. 172). Donna Newman-Bluestein (DMT therapist) says in an interview with Joshua Gordon: "Everything we think, everything we feel, everything we've ever experienced, lives in the body. The body is the storehouse of our past experiences"[xv]. The difference would be that DMT therapists, unlike Drama Therapists, have the skills to 'read' into the movement of the clients to 'see what is there' or 'not there'[xvi].

Somatic psychologists and DMT therapists work by following and expanding on what they call a 'movement tag', which is a repetitive mannerism that a person uses to 'check out' of present time when they feel uncomfortable and "these indicate the places where our bodies have split off from our psyches" (Caldwell, 1996). The 'movement tag' has history and 'memory associations' that can be explored further by through dramatization. I think that what DT, DMT and Body based psychotherapy have in common, and where these disciplines can learn from each other is that they are all concerned with embodied learning; "teaching a person to glean information from their body, to support a more embodied decision-making process"[xvii].

Christine Caldwell, a pioneer in the field of Body-centred psychotherapy (BCP) in recovery, talks about the importance of *experiential therapy*; creating spaces in which the client can 'feel and process sensations and emotions' and that "postures, gestures and movements influence how we appraise stiumuli and respond to them" (Belling, 2018, p. x). Caldwell, in her book *Getting our bodies back*, introduces embodied approaches that teach one 'how to reclaim self-regulation' by "befriending the disowned body you live in and by *moving* into wholeness" through following the 'organic movement process' (Caldwell, 1996, p. IX). The premise of BCP is that the body is 'speaking through sensation, breathe, and *movement'* and that this 'body speech' arises from the unconscious 'traumatised parts' (Caldwell, 1996, p. 4). Caldwell emphasises the importance of allowing conscious movement to happen in such a way that it impacts our whole beings 'because our bodies love to move'; "when movement is held back, energy life flow is impeded and we become sick" (Caldwell, 1996, pp. 15-16).

In the Sesame approach to DT, mindful, conscious movement is encouraged with an 'emphasis on natural movement' (Belling, 2018, p. ix). When one follows the "natural and conscious movement (it) is a way of tuning into the body, of listening, just as the organic, unfolding movement is the body's *response to an inner state" says Belling* (Belling: ix). Movement is the way in which we can make the 'body speech' visible, to be witnessed and acknowledge by oneself, the therapist and others. In this way we develop our ability "to be with our body in all its changing expressions" (Belling, 2018, p. 172). The Sesame approach uses a unique that combines story, dramatic action and movement in a therapeutic setting and emphasizes the importance of knowing with our *whole* selves body, mind and soul (Pearson, 1996, p. 10). It incorporates "dance-movement and mime, which relies on gesture, nonverbal sound and touch…these [elements] form the basic language of a session" (Pearson, 1996, p. 8).

Noa Belling, a body-centred psychotherapist, writes about how natural conscious movement can be a 'path to personal growth' and she calls this type of movement "an inquiry into body and soul through movement" (Belling, 2018, p. 173). She advocates for it being a 'resourcing' experience and how, by 'following the impulse of natural movement', it can offer relief from stress, and has the "potential to shift how you feel". Moreover, it cultivates necessary 'vitality' or 'life force' energy (Belling, 2018, p. 172); a critical quality the addict is lacking, that needs to be nurtured. Practices like mindful movement, qigong and yoga can offer this. Belling says that through body-mindful practices you can "connect more deeply with yourself, to consider what you need, from your bodies perspective, not (from) the mind's" (Belling, 2018, p. 172).

Natural movement is not structured, controlled or guided, it may consist of playing gentle, neutral music and 'allowing' participants to move freely in the space, inspired by a sense of 'listening inward' (Belling, 2018, p. 173), grounding oneself into the body with conscious breath and moving with a sense of *embodied presence.* It concerns a 'curiosity' about the uncomfortable sensations in the body rather than judgement towards what we are feeling as 'bad and unwanted'. Rather, natural movement is about staying and moving with that feeling for a while; it is about "being open to what that sensation and those movements are attempting to communicate" (Belling, 2018, p. 172). Belling speaks about listening to the 'body's feedback'. By becoming still, paying attention, naming and labelling feelings, it can create some distance between the Self and the experience; "I am experiencing a feeling of sadness - rather than I am sad…then noticing and describing how sadness expresses itself in the body and how you acknowledge your body's expression of feelings" (Belling, 2018, p. 172);

Dancing reduces stress. "The *action* of movement releases muscular or nervous system energy in the process" (Belling, 2018, p. 177). Belling advises experimenting with following the body's "natural movement, exaggerating it or making it smaller, focusing on it and discovering what it leads to next" (Belling, 2018, p. 174). You may find that the body will naturally downregulates itself through the movement, by simply following what it needs. "The gifts that come from this practice are energy…feeling connected with your truth and natural movement as an expression of authenticity" (Belling, 2018, p. 174) as well as take home skills that can "bring you relief, support and a new perspective" (Belling, 2018, p. 174).

As Drama therapists, we have the opportunity to facilitate this process of tuning into the body and 'listening' through authentic movement with our clients, we can also teach them how to create a conscious movement process for themselves as a take home skill. When they feel anxiety, stress or urges and cravings emerge, they can shift it by moving and in so doing, develop more recovery resilience, because the real test is life outside the recovery centre. Belling advises that clients who have suffered trauma and who struggle with stress, anxiety and addiction may be fearful of looking in, something as simple as closing their eyes or making eye contact can create discomfort, so sufficient safety/trust in the body must be created first.

For this she recommends 'starting with gentle breath and mindful body exercises and developing trust in the group and with the therapist before commencing with movement' (Belling, 2018, p. 179). The therapist also has to be skilled in mindful body approaches and must be consciously embodied themselves, this is because "movement, when not (carefully) facilitated can cause distress, because it unblocks energy which has been blocked and it releases trapped emotions and memories" (Belling, 2018, p. 179); this may be distressing for the client and they may want to numb out, thus experience with embodiment is vital.

Van der Kolk advocates for physical (embodied) practices to support trauma/addiction recovery because of how they improve body (Self) awareness, health and wellbeing in terms of the neurological mechanisms at work. Returning to the Insula, which is responsible for facilitating mind-body integration, van der Kolk describes how your "felt experience of body-mind can be stimulated every time you move your body's joints", because the more you spend time with awareness in the body, rather than the mind, the "more neural connections are activated" in the Insula and the more integrated the body-mind will be (Belling, 2018, p. 179).

When you move the body you are not only bringing oxygen to the brain; ‘oxygen reduces cortisol which reduces stress’ (Belling, 2018, p. 179), but you are increasing your capacity for Self-awareness, this in turn increases the capacity to Self-regulate and to inhibit urges, gradually developing recovery resilience. Self-awareness and intuition are also intimately connected and the interoceptive and proprioceptive systems can be considered one’s own internal compass and if one is attuned to it , it can guide one on one’s healing journey because "your body has its own inherently positive direction and force, your body knows the direction of healing and life' says Eugene Gendlin (Belling, 2018, p. 171). As neural connections are made in the Insula, the brain's ability to "track the internal state of the body" is strengthened. (Belling, 2018, p. 179). The more you can feel into the body, the more connected ‘you’ (mind/ soul) become to the body, this is Bodymind integration at work on a neurobiological level.

The Insula and empathy are also connected because "as we can better sense our internal world, so we become better at sensing the internal world of others - which is the foundation for empathy" (Belling, 2018, p. 179). Thus, dance and movement may offer us opportunities to develop interoception, the ability to look inward, and to move with the impulses and feelings that are present. By doing so one discovers the landscape of the internal world and we become less likely to project our attention outwards in attaching to things, people or substances that seem to alleviate the pain. At the same time, we develop Self-awareness and empathy for ourselves and others; self-compassion and self-love is the foundation of healing.

Overall Conclusion

In my reading, I have come to appreciate why it is that embodied therapies are useful in the context of recovery from addiction. It is not necessarily in their ability to heal the underlying trauma which contributed to the addiction; rather it is in their ability to gently facilitate the suffering individual's recovery process to find enough safety in the body for them to begin to heal the deeper wounds. As Bessel van Der Kolk states “the single most important issue for traumatized people is to find a sense of *safety* in their bodies” (van der Kolk, 2014); here safety implies the capacity to *for awareness to Self-regulate*; to *not* be overwhelmed by emotional flooding and the unbearable physical sensations *long enough* to *resist the urge* to use substances to escape. This is where I believe the value of the *embodied*, body referenced, body inclusive, Body-mind based therapeutic such as DT and DMT approaches lies. They offer the gifts that come with befriending the body and in so doing coming home to the Self.

Catherine Kerr (neuroscientist) in a Youtube TED X talk titled "Mindfulness Starts with the Body: A View from the Brain", says that being mindful of body and breathe is the first step in learning how to regulate emotions. When I heard this, I had a 'eureka' moment. I understood then that my role as a Drama Therapist would be to start by guiding clients in ways to become *body mindful.* This may help them to coordinate the mind and body and to develop 'embodied consciousness', to access body intelligence and to foster *embodied presence*.

By being more in present time and awake to the messages their Body-mind is sending them through their emotions and sensations and listening to them with intention, interest, curiosity and compassion instead of wanting to escape them, one can begin the healing journey. Once this is achieved the other systems of the body will begin to correct themselves because the mind and body are beginning to communicate. The processes of developing self-awareness, interoception, emotional regulation, and accessing higher mind faculties such as attention, discernment, conscious decision making, creativity and intuition will naturally begin to follow. When this happens, clients are better able to Self-regulate emotional states, inhibit impulses and perhaps delay relapse long enough for the deep work of healing the trauma to begin.

This work was critical in that it has allowed me to integrate diverse paradigms from neuro-science, Somatic psychology, trauma and addiction research, DT and DMT practice into my own unique way of working. My personal investment in this research was primarily to ground myself in fundamental trauma and addiction theory so that I may be able to fulfil what the role of 'Drama Therapist working with addiction' requires, which I believe is my calling in life.

The takeaway here is that when we (the therapists) have more of an understanding of what the underlying causes are and what drives people to use drugs, we can begin to help them; although the 'causes' that drive people to do drugs appear to be different at first. In most cases the underlying 'causes' arise out of pain and human suffering that was likely triggered by a trauma, but the behaviour of substance use seems to be predominantly driven by a need to regulate the body, mind and mood, because the built-in capacity to regulate has been compromised by a traumatic experience and because of the overwhelming, recurring and uncomfortable sensations experienced in the body, such as anxiety. The substances don't eliminate suffering, but merely supresses it. It does in some way help people to 'cope' and is thus, by definition, a measure of *self-medication*. Nevertheless, it can be said that finding more appropriate and healthier ways to regulate mind and body is thus of immense value.

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Endnotes

[i] NADTA Website

[ii] NADTA Website

[iii] NADTA Website

[iv] A guidance note from Dicks LV, Haddaway N, Hernández-Morcillo M, Mattsson B, Randall N, Failler P, Ferretti J, Livoreil B, Saarikoski H, Santamaria L, Rodela R, Velizarova E, and Wittmer H. (2017). Knowledge synthesis for environmental decisions: an evaluation of existing methods, and guidance for their selection, use and development – an excerpt from a report from the EKLIPSE project

[v] https://www.etymonline.com/word/addict

[vi] https://www.goodreads.com/quotes/989989-what-is-addiction-really-it-is-a-sign-a-signal

[vii] Interactive Effects of Sex and 5-HTTLPR on Mood and Impulsivity During Tryptophan Depletion in Healthy People. Espen Walderhaug, Andres Magnusson, Alexander Neumeister, Hilde Lunde, Helge Refsum, Nils Inge Landrø. Published:June 04, 2007DOI:https://doi.org/10.1016/j.biopsych.2007.02.012

[viii] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3936960/
[ix] https://www.treatmentsolutions.com/therapies/expressive-therapy/

[x] AA –Alcoholics Anonymous is an international fellowship of men and women who have had a drinking problem. It is nonprofessional, self-supporting, multiracial, apolitical, and available almost everywhere. There are no age or education requirements. Membership is open to anyone who wants to do something about his or her drinking problem – except from https://www.aa.org/pages/enUS/what-is-aa

[xi] NA - Narcotics Anonymous (NA) is a non-profit fellowship of men and women for whom drugs had become a major problem. We are recovering addicts who meet regularly to help each other stay clean. Narcotics Anonymous offers recovery to addicts around the world - http://na.org.za/

[xii] https://www.mdrnyu.org/2016-fall-dancing-for-dopamine/

[xiii] https://www.nytimes.com/2007/02/06/health/psychology/06brain.html

[xiv] https://www.nytimes.com/2007/02/06/health/psychology/06brain.htm/

[xv] https://www.alltreatment.com/dance-movement-therapy/

[xvi] https://www.alltreatment.com/dance-movement-therapy/

[xvii] https://www.alltreatment.com/dance-movement-therapy/