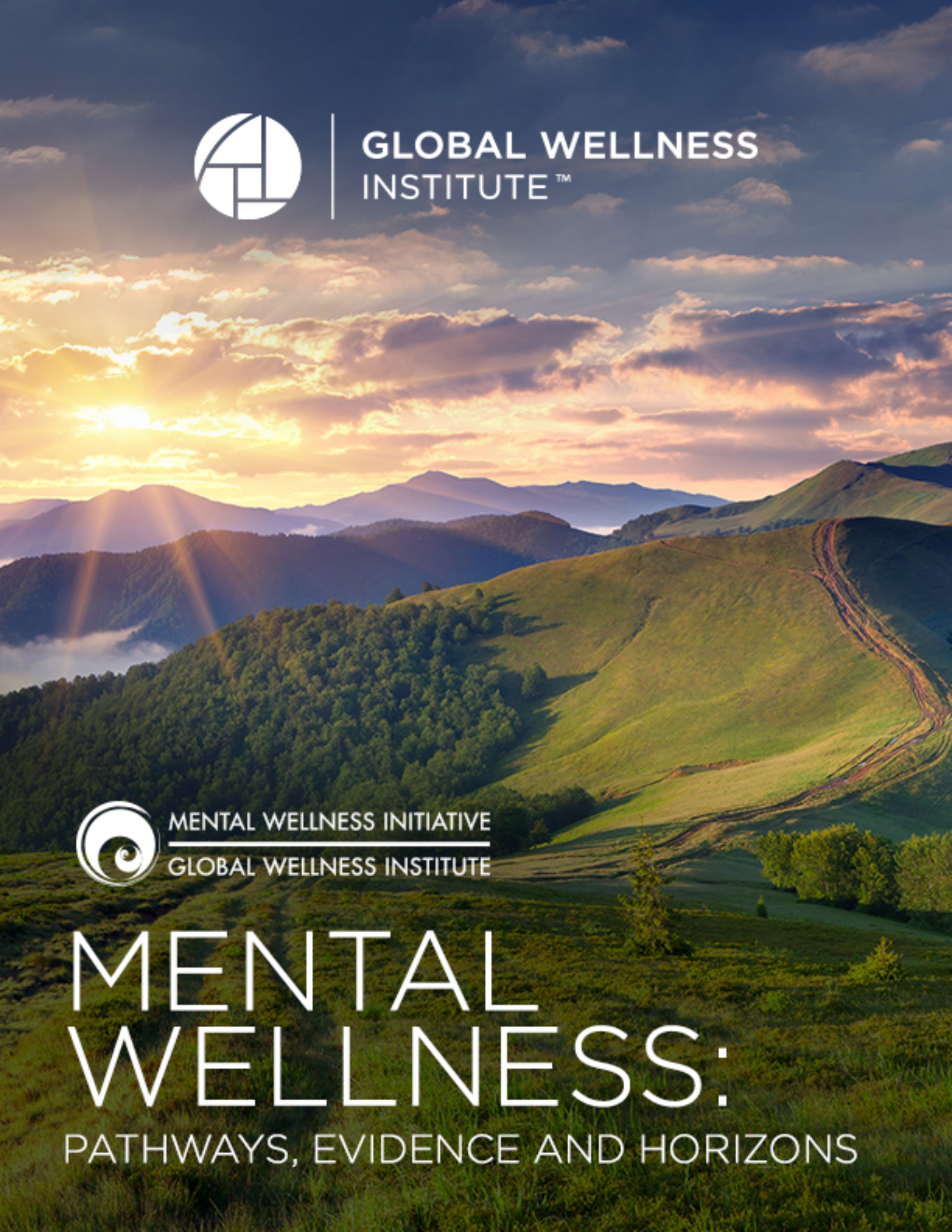
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MENTAL WELLNESS:
PATHWAYS, EVIDENCE AND HORIZONS

JUNE 2018 | WHITE PAPER

MENTAL WELLNESS:
PATHWAYS, EVIDENCE AND HORIZONS

from **The Mental Wellness Initiative** of the **Global Wellness Institute**

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We are honoured that Dr. Ranieri Guerra, the World Health Organization's Assistant Director General for Strategic Initiatives, has contributed the Foreword for the White Paper.

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FOREWORD

Dr Ranieri Guerra[1]

This White Paper comes at the right time, anticipating some of the issues addressed by the latest UN progress report on Sustainable Development Goals (SDGs)[2]. Although mental health is widely recognized as a *state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community*[3] and was included in the 2015 UN declaration addressing NCDs *"…including behavioural, developmental and neurological disorders, which constitute a major challenge for sustainable development" (paragraph 26)*, we still see very limited reference to the current global situation. In fact the 2018 Report's only reference to mental health is that public open spaces in cities contribute to physical and mental health, which sounds more like a mantra than a conclusion supported by evidence.

There is general agreement that the overoptimistic assumptions of the SDGs are now passing through a reality check that indicates where we need to re-prioritize and move resources accordingly. In fact, progress documented so far is insufficient to meet the goals and targets set for 2030. The challenge is based on factual evidence, such as:

- Disparities are still prevalent and impact on disadvantaged and marginalized communities and individuals, including the world's increasing population of refugees and migrants.
- Youth are three times more likely to be unemployed than adults.
- Less than half of all children and adolescents meet minimum standards in reading and mathematics.
- 2.3 billion people still lack even a basic level of sanitation service.
- Close to 1 billion mostly rural people still lack electricity.
- In sub-Saharan Africa, the HIV incidence among women of reproductive age is 10 times the global average.
- Nine out of 10 people living in cities breathe polluted air.
- While some forms of discrimination against women and girls are declining, gender inequality continues to hold women back and deprives them of basic rights and opportunities.
- Conflict, climate change and growing inequalities add additional challenges.
- After a prolonged decline, the number of undernourished people rose from 777 million in 2015 to 815 million in 2016, mainly due to conflicts as well as drought and disasters linked to.
- In 2017, the North Atlantic hurricane season was the most costly ever and the past five-year average global temperature is the highest on record.

Given this picture, we may doubt that SDG 16, for instance, is realistically placed to drive our cultural change and social shifts, I.E.: *Promote peaceful and inclusive*

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[1] Dr Ranieri Guerra was the Chief Medical Officer in Italy, and Director General for Preventive Health, before joining the World Health Organization where he is now Assistant Director General for Strategic Initiatives.

[2] *The Sustainable Development Goals Report 2018,* https://www.un.org/development/desa/publications/the-sustainable-development-goals-report-2018.html . Accessed June 23, 2018.

[3] http://www.who.int/features/factfiles/mental_health/en/ . Accessed June 23, 2018.

societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

The question is how mental health and wellness can survive the inevitable priority setting that is likely to focus more and more on the specific challenges indicated. One alarming element is the constant underfunding of the sector as indicated by several country and sectoral reports[4] commenting that more is spent on takeaway coffee in a single week in the UK than is spent on development assistance for mental health in low-and-middle-income countries in a year. This sounds bizarre in a context whereby Mental, Neurological, and Substance Use (MNS) disorders affect one in four people over their lifetime and one in ten at any given time, and thus affect billions of lives globally. MNS disorders are the leading cause of disability worldwide and account for high levels of premature death and low productivity across many workplaces and economies being thus of significant concern not only for public health but also for economic development and social welfare (WHO, 2018).

Therefore, it is clear that any evidence provided to support the concept that the first 1000 days of life are modeling our future, that the implementation of mental, nutritional and physical modalities that support lifelong growth of mental wellbeing and happiness, creativity and generativity, wisdom, inner peace and transcendence as the White Paper prescribes, become major science based contributions to the needed cultural and health shift. As documented by this White Paper on Mental Wellness, culture and science, targeted and early interventions are more important than financial resources, if we consider for instance that physical activity can be seen as the best and least expensive global preventive tool, but also as a clinical treatment that allows better recovery and mitigates actual organic damage on large areas of body and brain. Food and diet are also possibly the most important non-medical factors influencing individual life. Evidence suggests that not only should we promote personalized medicine, but even *personalized diet* as individual metabolisms respond differently to food inputs. Research on epigenetics and metabolomics is likely to impact our knowledge and promote a shift in paradigms that will inevitably also lead to a reconsideration of the SDGs.

This research is based on partnerships and on collaborative knowledge hubs that the White paper anticipates presenting academic and industrial perspectives. It is interesting to note that the two parts of the White Paper do convey the same coherent message, in line with the initial quote: *There are many paths to the top of the mountain, but the view is always the same*. In this case the many opinions collected and documented seem to lead to the same conclusions worth more investigations and clear and sound independent protocol designs, as anticipated by the Editor of this initial excellent collection.

[4] https://www.odi.org/publications/10423-mental-health-funding-and-sdgs-what-now-and-who-pays (May 2016). Accessed June 23, 2018.

INTRODUCTION

Mental health is a major priority for both national and international health organizations.

In 2013, the World Health Assembly approved a "Comprehensive Mental Health Action Plan for 2013-2020". The Plan is a commitment by all WHO's Member States to take specific actions to improve mental health and to contribute to the attainment of a set of global targets.

The Action Plan's overall goal is to promote mental well-being, prevent mental disorders, provide care, enhance recovery, promote human rights and reduce the mortality, morbidity and disability for persons with mental disorders:
http://www.who.int/mental_health/action_plan_2013/en/

In America, clinical depression has become one of the nation's most costly illnesses. Left untreated, depression is as costly as heart disease or AIDS to the US economy, costing over $51 billion in absenteeism from work and lost productivity and $26 billion in direct treatment costs. Depression tends to affect people in their prime working years and may last a lifetime if untreated. More than 80 percent of people with clinical depression can be successfully treated. With early recognition, intervention, and support, most employees can overcome clinical depression and pick up where they left off.

- Depression ranks among the top three workplace problems for employee assistance professionals, following only family crisis and stress.
- 3% of total short-term disability days are due to depressive disorders and in 76% of those cases, the employee was female.

http://www.mentalhealthamerica.net/conditions/depression-workplace

The World Health Organization (WHO) has taken the position that mental health leads to mental wellbeing: "Good mental health is related to mental and psychological well-being. WHO's work to improve the mental health of individuals and society at large includes the promotion of mental well-being, the prevention of mental disorders, the protection of human rights and the care of people affected by mental disorders".
http://www.who.int/mental_health/en/

Mental health included in the UN Sustainable Development Goals

For the first time, world leaders are recognizing the promotion of mental health and well-being, and the prevention and treatment of substance abuse, as health priorities within the global development agenda. The inclusion of mental health and substance abuse in the Sustainable Development Agenda, which was adopted at the United Nations General Assembly in September 2015, is likely to have a positive impact on communities and countries where millions of people will receive much needed help.

Goal 3 of the 17 Sustainable Development Goals (SDGs) focuses on ensuring healthy lives and promoting well-being for all at all ages.

Target 3.4 requests that countries: "By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being."

Target 3.5 requests that countries: "Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol."

MENTAL WELLNESS

The Mental Wellness Initiative (MWI) of the Global Wellness Institute was established in November 2016 following high interest in this topic at the Global Wellness Summit in Kitzbühel, Austria, in October 2016. Delegates to the GWS expressed keen interest in learning more about the pathways leading to mental wellness and to exploring where these pathways may lead in terms of the higher potential of human development.

The Mental Wellness Initiative of the Global Wellness Institute aims to understand those pathways that help people stay well and thrive mentally as well as physically. The lens of mental wellness extends from the very inner aspects of individual experience through to the influence and condition of what is sometimes called the 'social mind' – i.e. the mental condition of the surrounding society and its effect on &/or contribution to mental wellness. The GWI's Mental Wellness Initiative will collect and share evidence on a wide range of mental, nutritional and physical modalities that support lifelong growth of mental wellbeing and happiness, creativity and generativity, wisdom, inner peace and transcendence.

An early goal of the MWI was to produce a position paper – a White Paper – that would document those known pathways to mental wellness that are supported by evidence and to commence a process of establishing guidelines and training for the spa and wellness industry in the field of mental wellness.

This White Paper is a first iteration resulting from that process. The knowledge presented here will grow in the months and years to come, but beginning to map the territory is a first and necessary step to learning how to live in that new territory. This is the purpose of the MWI's White Paper on Mental Wellness.

The White Paper is presented in two sections:

Part 1 presents scientific evidence for many of the known pathways to mental wellness and draws on both western and eastern traditions of knowledge to gain insights into where mental wellness could take humanity – higher levels of human functioning. Here, evidence is at the core of the pathways that are shared.

Part 2 is presented from the perspective of the Wellness Industry and offers evidence on the outcomes of wellness and spa treatments as well as perspectives on best practice in mental wellness within the industry. Part 2 offers recommendations and guidelines for building best practice around a framework of mental wellness, starting at home with caring for the carers within the industry.

PART 1:
PATHWAYS, EVIDENCE AND HORIZONS

"There are many paths to the top of the mountain, but the view is always the same."
Chinese proverb

OVERVIEW

"What a piece of work is a man! How noble in reason, how infinite in faculty! In form and moving how express and admirable! In action how like an angel, in apprehension how like a god! The beauty of the world."
William Shakespeare, Hamlet, Act 2, Scene 2.

The arc of life, we are learning, begins before conception. The health of the parents prior to and at the time of conception is now known to influence our life course and some determinants of both health and lifestyle diseases

The first two years of life are critical in shaping future physical and mental health. Parenting styles, nutrition and air quality are some of the factors that shape future patterns of health and mental wellbeing. In the opening section of this White Paper, Professor Sergio Pecorelli MD PhD, a pioneer in the field that is now known as *The First 1,000 Days of Life*, details these influences and what can be done about them. A new *Lancet* series on Preconception Health highlights the study of preconception health as of foundational importance in understanding and shaping future health[5]. One article in the series, titled *Before the beginning*, notes that 'observational studies show

[5] http://www.thelancet.com/series/preconception-health?dgcid=etoc-edschoice-email_tlwpreconhealth18

strong links between health before pregnancy and maternal and child health outcomes, with consequences that can extend across generations'[6].

Given all of these foundational influences on human development and mental health, is there any hope for change in adulthood? A growing number of studies on wellness modalities – e.g. meditation, yoga, dance - are finding positive changes in the brains of regular practitioners. These are discussed in detail in Part 1 of this White Paper. At the heart of this emerging body of research findings is the concept that the brain can continue to grow and develop new neural pathways and connections well into adulthood. This evidence stands in contrast to earlier views that brain development ceased in adolescence.

In the section on *Neuroplasticity*, Lawrence Choy MD, a member of the Mental Wellness Initiative and a Stanford-trained psychiatrist and diplomate of the American Board of Psychiatry and Neurology, elaborates in detail on this. He notes:
"We now have substantial scientific evidence that explains how wellness habits promote our brain to change and rewire itself through a lifelong process termed *Neuroplasticity*. The strengthening and integration of the neural connections in the higher-level brain regions, particularly the prefrontal cortex, are fundamental in the benefits of wellness practices. Neuroplasticity refers to our brain's intrinsic ability to continuously alter its structure and function throughout our lifetime. Neural changes occur on multiple levels, ranging from the microscopic to the observable. It happens on different time scales, spanning mere milliseconds to years and decades. In gaining a deeper understanding of neuroplasticity and its practical applications, we can better harness its immeasurable potential, empowering ourselves and each other toward meaningful growth and positive change. We will ensure that we not only survive in our fast-changing modern day world, but learn to thrive both individually and collectively in a shifting landscape of unpredictability and uncertainty. With the awareness, knowledge, and practice of self-directed neuroplasticity, we can achieve mental and overall wellness."

This is a new foundation for building pathways to mental wellness. The intrinsic capacity for the brain to grow and develop integrated neural connections in response to lifestyle changes and routines offers new insights into just how far human development can advance within an individual lifespan.

Twentieth century theorists of human development such as Abraham Maslow and Lawrence Kohlberg posited in their later work the possibility of higher stages of human functioning characterized by Maslow as a Transcendental Stage of human functioning and by Kohlberg as a universal state of moral thinking. Theorists such as Ken Wilber have built bridges to classical Indian philosophy and the development of human consciousness. Mental Wellness Initiative Vice Chair, Alina Hernandez outlines these theories in the section on Higher Human Potential later in this White Paper (http://www.lukat.it/stage-development-theorists.pdf).

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[6] Judith Stephenson, Nicola Heslehurst, Jennifer Hall, Danielle A J M Schoenaker, Jayne Hutchinson, Janet E Cade, Lucilla Poston, Geraldine Barrett, Sarah R Crozier, Mary Barker, Kalyanaraman Kumaran, Chittaranjan S Yajnik, Janis Baird, Gita D Mishra. Before the beginning: nutrition and lifestyle in the preconception period and its importance for future health. The Lancet. April 16, 2018.
DOI: https://doi.org/10.1016/S0140-6736(18)30311-8

While Western theorists posited such higher levels of human potential in the second half of the twentieth century, such views have been the bedrock of Eastern theories of enlightenment and paths to attaining the highest levels of human potential. Interestingly, many of the wellness methods that are being studied have their roots in non-Western traditions – meditation, yoga, Tai Chi, Qi Gong, etc. Other modalities, such as dance, music etc., have deep roots in the evolution of the human species and seem to serve as technologies for activating existing potentialities already present in the brain, possibly through their influence across thousands of generations of human evolution.

In studies that we shall report on in more detail in the White Paper, brain researchers studying dance report that dance, by contrast with other forms of exercise, results in not only increased growth of grey and white matter in the motor areas of the brain (as seen in other athletes) it also produces increased brain development in the meaning areas of the brain – i.e. the prefrontal cortex.

Why should a movement exercise produce changes in the meaning areas of the brain? The researchers propose that this is because dance has been from early in human evolution a means of communication – communication with the divine, communication with animal spirits before a hunt, communication with weather forces, communication with ancestral spirits, as well as communication with the other dancers.

Not surprisingly, research on dance with people suffering from dementia find that dance is the most effective means of exercise in slowing dementia and enhancing communication. The *Dance for PD* movement, where dance is a program for people with Parkinson's Disease, finds improvements not only in mobility but also in the ability to communicate. These reflect deep brain changes associated with dance as a wellness modality for those with serious neurological conditions. We will look more closely at this in the following sections of Part 1 of this White Paper.

Sleep and meditation are different forms of experiencing the rest that is essential for our bodies to renew themselves on a daily basis. Evidence that supports this is discussed in Part 1. It turns out that the Arts – music, the visual arts, writing, as well as dance, all have documented benefits on mental health and wellbeing and we review these as part of the wider map of pathways to the summit of full mental wellness. And laughter – just the experience of laughing – not at or about anything, but laughing with others creates health and happiness that is measurable in physiological terms. Laughter and light, for light turns out to be of foundational importance to our sense of time and of place in our world. With the right light and the right amount of it we thrive, with too much light, the wrong type of light or not enough light, we wilt. As science comes to a deeper understanding of this, new pathways have begun to emerge.

From so many different angles – inflammation, immunity, preventing metabolic disorders, etc. - a healthy, largely organic, diet is being shown to be foundational in enhancing both physical and mental wellness. Both the physical and social environments that we live in are of great importance to our mental wellness. Research discussed in the ENVIRONMENT section highlights just how important these influences are. And the body of evidence is growing for us to begin to understand what serve as paths to higher stages of human development and, indeed, what higher stage human functioning may look like - and why it matters.

At the October 2016 Global Wellness Summit in Kitzbühel, Austria, the Mental Wellness Initiative was established with a commitment to put a flag in the ground and

begin mapping the territory of this new field of Mental Wellness. This White Paper is a beginning. The mapping will continue and, with input from members of the global wellness community, the guidelines for policy, practice, training, evaluation and innovation will be expanded. The work has begun – yet it is very much a work in progress.

EARLY LIFE PREVENTION: THE FIRST 1000 DAYS

Sergio Pecorelli, MD, PhD
University of Brescia, Italy and Lorenzini Medical Foundation, New York, NY, USA

Historically, research and clinical knowledge surrounding the *"First one thousand days of life"* has primarily centred on the nutritional component of this critical period in early human development.

Evidence clearly shows how a holistic approach towards prevention is the most effective means to halt the NCDs (Non Communicable Diseases) crisis worldwide. This includes healthy lifestyles (physical exercise, nutrition…), supported by clinical/molecular insights and personalized intervention targeting individuals (and their parents) in the pre-conception, infancy and early childhood stages of life. Moreover, mounting evidence from interdisciplinary fields now points to the undeniable importance of understanding the full contextual environment in which new life is conceived and developed.

Likewise, when discussing Mental Health and Wellbeing, we must pay attention to the phenomena that lead to a good mental status or to disturbances or impairments. In this, our attention goes to early life, from conception, or even pre-conception to newborn and infant.

The 1,000 days - and indeed, the time before conception - between pregnancy and a child's 2nd birthday are the most critical time for a child's cognitive, physical and social development, and eventually the entire lifespan (1).

The health and wellbeing of a woman (in the pre conception/conception/pregnancy and lactation) is directly connected to the growth and health of her infant, both in early and in the late life stages. The right lifestyle for the child and surrounding environment during this time can have a profound impact on the child's growth and development and reduces disease risk in the years to follow.

During the process of human development an innate plasticity induces biological variations to provide a fit adaptation to an ever-changing environment. Through a complex network of molecular mechanisms, an organism can respond to environmental stimuli in an integrated and coordinated manner. The interplay between inherited genes and the exogenous stimuli (gene-environment interaction) has been described as developmental plasticity, representing the organism's effort to fine-tune the genome to produce phenotypic profiles adapted to the predicted changing environment: this phenomenon is known as **Adaptive Developmental Plasticity** (2-6).

The plasticity of tissues is particularly affected by environmental exposure during development in utero, although in some cases (respiratory, immune system, and the brain) the window of susceptibility extends into childhood because of the time-extended tissue development. Growing evidence indicates that the exposure during the sensitive window of developmental stages of the individual to nutritional imbalance, or environmental contaminants, including environmental noise organic pollutants, pesticides, metals, and chemicals in drinking water, may determine epigenetic alterations with a potential impact on adult life.

Therefore early life exposure can program the onset of chronic diseases, and especially neurodegenerative disorders, in the adult and old age. Considering that the new generations were exposed already, during conception, and have not reached their later and more disease-prone stages of life, poses additional concern on the expected unsustainable increase of chronic diseases.

THE EFFECTS OF MOLECULAR INSULTS

The effect of the parental epigenetic inheritance on many syndromes is an established phenomenon that now is starting to produce experimental evidences (7). Several major neurodevelopmental syndromes are linked to paternal and/or maternal epigenetic inheritance or even both. During pregnancy instead, environmental exposures such that to maternal prenatal stress has been recurrently associated with offspring's onset of cardiovascular (atherosclerosis, hypertension, coronary heart disease and heart failure), metabolic (reduced fetal growth, obesity and diabetes) (8-11) and neurological diseases (visuomotor disorders, attention deficit, impaired cognition, potential delay of temporal processing acuity, and reduced brain volume in children), renal (chronic kidney disease)(12) and mental and psychiatric conditions (13) with remarkable gender differences. The interaction between the environment, including both endogenous (such as hormone levels or immune status) and exogenous factors (such as nutritional and chemical exposures) and the epigenome has been defined as "environmental epigenomics".

Prenatal exposure to maternal stress, general and pregnancy-related anxiety, stressful life events, natural disasters, produce long lasting effects on behavior and mental health of the offspring (14). This is a hyperactive response to stressful stimuli, and epigenetic mechanisms, through DNA methylation, have been implicated in regulation of these phenotypic effects. Solid evidences, for instance, are demonstrating how maternal smoking has potential lifelong consequences on offspring generating deleterious epigenetic patterns in critical genes (15).

Widespread air pollution has further shifted the earliest exposure window to the time of conception. Up to 30-40 years ago, substantial first exposure to pollutants began during mid to late adolescence and in the work environment. Currently, exposure to low doses of chemicals can target human gametes before fecundation, and the fertilized oocyte through the uterus (16). This is a key factor that can explain the emergence of developmental disorders and childhood cancer, such as brain tumors and leukemia, especially in highly polluted areas (17). Considering that the new generations were exposed to environmental hazards during conception and have not reached their later and more disease-prone stages of life, poses additional concern on the expected unsustainable increase of chronic diseases. Pre-conceptional, peri-natal, and early childhood life-stages are affected by exposure to endocrine disruptors and environmental xenobiotics through interactions with genomic, epigenetic, nutritional, or psychosocial factors. These exposures alter the developmental processes and influence disease susceptibility over the life course in a trans-generational manner.

This approach moves away from earlier health promotion theories based on an exclusively individual responsibility (including the blame for inherited disease-prone genome) and sheds light on the joint responsibility of individuals and governments to provide society with a healthy environment and infrastructure.

Today there is agreement that the first one thousand days of life, from conception to the second year of life, are the most important determinants of health of the individuals and probably account for 70% of good health and wellness in the lifespan.

RATIONAL PREVENTIVE INTERVENTIONS IN THE FIRST 1000 DAYS

Effective preventive interventions for populations can be created to significantly lower the burden of healthcare costs and increase the quality of life, but these require a perspectives change. The target of interventions need to focus on an individual (the foetus/infant) who is not responsible for his or her own lifestyle, and involves an environment (that often times can be rarely or only narrowly be changed) and that is much wider than his or her immediate surroundings.

Such efforts require a systemic approach representing a challenge for governments and stakeholders and it may generate a dramatic social, health and economic impact. It is clear how the private sector shares with public institutions common responsibilities while foreseeing an opportunity to redesign market strategies toward more ethical products. Technological development societal advances walk in parallel with education for a structural establishment of the social importance of prevention.

THE IMPLEMENTATION OF INTEGRATED AND SYSTEMIC INTERVENTIONS

Preventive efforts should continue to focus on the 1,000 days, providing a game-changing perspective shift to develop more efficient healthcare systems. A consistent, sustainable, and timely commitment, and active investment by governments, industry, academic and civil society represents a prerogative to tackle preventable health issues and inequities globally.

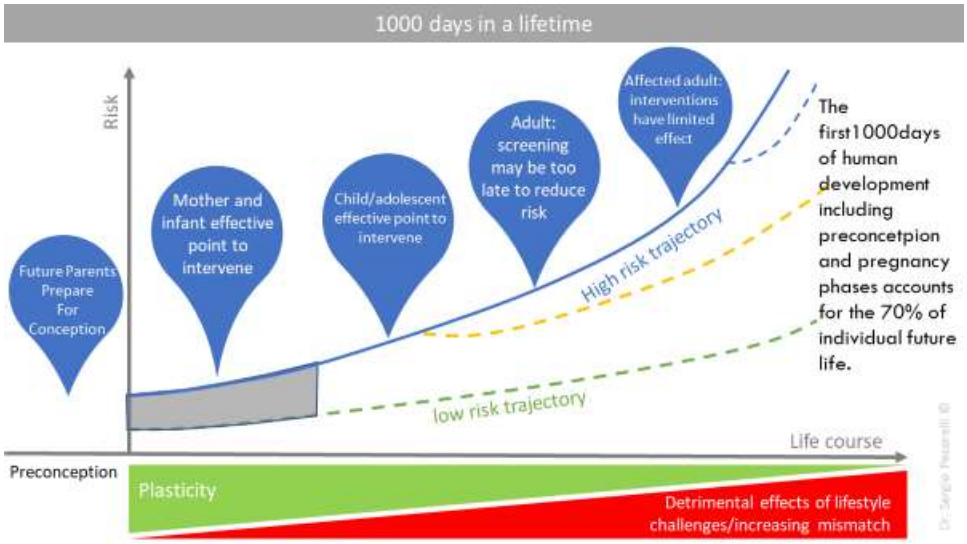
So far, priority efforts to prevent NCDs have primarily focused on adult individuals' risk factors (poor diet, physical inactivity, smoking and alcohol consumption) while almost ignoring early stages of development for individuals.

Ultimately, the assessment of the feasibility, efficacy, effectiveness and efficiency of preventive strategies, inspired by the *First 1,000 days* paradigm with a life-course and multilevel outcome perspective represents an essential step to objectively support specific policy activities.

A project, called *"The First 1,000 Days Program",* a collaboration with the University of Brescia, Mount Sinai School of Medicine and several Institutions around the world, has started recently in the Italian city of Brescia and has the potential to support investigations of gene-environment interactions postulated as key factors for the development of: i) pregnancy outcomes such as preterm birth, preeclampsia and Intra-uterine Growth Retardation (IUGR); ii) neurodevelopmental impacts that are either highly prevalent, like attention deficit/hyperactivity disorder (ADHD), or invalidating, like autism spectrum disorder (ASD), and developmental antecedents such as infant temperament, parent-child interactions and attachment behaviors; and iii) many highly prevalent and relevant developmental disorders (e.g. asthma, schizophrenia, obesity, diabetes, hypertension...) (18).

THE VITAL ROLE OF THE WELLNESS PARADIGM FOR AN OPTIMAL LIFESPAN

It is very compelling to note that as we face the issue of prevention of NCDs, therefore including Mental Health and Wellness, we must realize that it starts very early in life, even before we are conceived. It is also remarkable how lifestyles and environment play an immense role in the early developmental process of our life, not only directly upon the individual but also through the parental behavior. This means that the Wellness world and industry (exercise, nutrition, mindfulness, massage, stress reduction, music, etc.) can impact extremely positively on the beginning of life and therefore it is also can respond and play a critical role in educating and empowering populations.



Source: Sergio Pecorelli, MD, PhD

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NEUROPLASTICITY AND MENTAL WELLNESS: OUR PATH FORWARD

Mental Wellness White Paper
By Lawrence Choy, MD
Global Wellness Institute
September 2017

Contents

The purpose of this chapter is to educate and promote the understanding of neuroplasticity and mental wellness, thus empowering people to fully harness the brain's capacity for positive change. This resource is intended to encourage the practice of self-directed neuroplasticity and wellness habits, which in turn will guide people toward a life of happiness, health, meaning, productivity, and purposeful living.

INTRODUCTION

Mental wellness refers to our psychological and emotional health. The term also encompasses the general sense of well-being in the physical, social, occupational, spiritual, financial, and environmental aspects of our lives. It is an active lifelong process that involves making conscious and intentional choices toward living a healthy, purposeful, and fulfilling life. It enables us to realize our potential, cope with daily stresses, work productively, and contribute meaningfully to our community and society.

Wellness practices have existed for centuries and millennia in promoting health and harmony. However, we were unable to provide a "hard science" explanation for their underlying benefits until the past few decades, thanks in large part to the advent of revolutionizing research technologies in brain imaging and molecular genetics. During the 1990's, coined *the Decade of the Brain,* our understanding of the most complex structure in the universe underwent a radical paradigm shift. At the time, the scientific community was convinced the adult brain was fixed and incapable of change when we reach our adult age. Moreover, we thought everyone was born with a fixed number of brain cells that would decline inevitably with age. This bleak belief implied that people

are not able to change or improve much once they reach adulthood. As the saying goes," You can't teach an old dog new tricks."

Fortunately, we were all proven wrong. We discovered stem cells actually exist in the adult brain. Furthermore, these newborn brain cells have the capacity to develop into mature functional neurons to aid in memory and learning in a remarkable process called *Neurogenesis.* In other words, we can add gigabytes and upgrade our brain's operating system in our old age!

We now have substantial scientific evidence that explains how wellness habits promote our brain to change and rewire itself through a lifelong process termed *Neuroplasticity*. The strengthening and integration of the neural connections in the higher level brain regions, namely the prefrontal cortex (PFC), are fundamental in the benefits of wellness practices.

In gaining a deeper understanding of neuroplasticity and its practical applications, we can better harness its immeasurable potential, empowering ourselves and each other toward meaningful growth and positive change. We will ensure that we not only survive in our fast-changing modern day world, but learn to thrive both individually and collectively in a shifting landscape of unpredictability and uncertainty. With the awareness, knowledge, and practice of self-directed neuroplasticity, we can achieve mental and overall wellness.

NEUROPLASTICITY

Neuroplasticity simply means change in the nervous system. It refers to our brain's intrinsic and dynamic ability to continuously alter its structure and function throughout our lifetime. Neural changes occur on multiple levels, ranging from the microscopic to the observable and behavioral. It happens on different time scales, spanning mere milliseconds to years and decades.

Brain plasticity can be positive, adaptive, and favorable or negative, dysfunctional, and undesirable. Positive neural changes are reflected in improved capabilities and performance as seen in knowledge and skill acquisition. On the other hand, negative plasticity is manifested as a decline or loss of functional ability, occurring in normal aging, brain injury, and strokes. Bad habits, drug addiction, and chronic pain are examples of unwanted maladaptive plasticity.

Time is of the essence in neuroplasticity. Across our lifespan, age may be the most important factor in determining our brain's capacity for change. Neuroplasticity is strongest during our first five years of life (Fig. 1). In this early critical period of activity-dependent plasticity, neural connections are formed at an immensely rapid pace. This window of heightened plasticity provides us with the invaluable ability to learn with enormous ease. We can acquire new skills through mere observation, immersion, and interactions in our social environment. In this critical period, we need to receive basic social experiences and multi-sensory stimulation, or we may risk becoming incapable of acquiring the more advanced skills and abilities later in life.

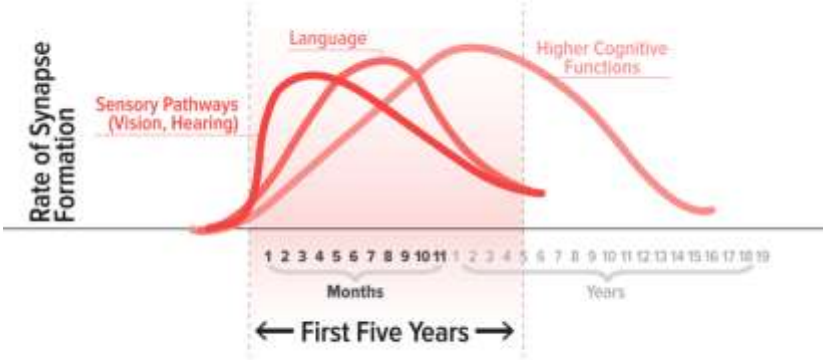

Figure 1. Human Brain Development (reused with permission)

Our brain's plasticity potential declines exponentially during the first five years and then steadily thereafter, reflecting both a decrease in the rate of formation of neural connections and an increase in the rate of pruning of unused connections. These neural changes vary in rate and time span across different regions of the brain, such that sensory and language areas of the brain mature earlier and are less able to change later in life. During the developmentally sensitive periods of "*Use it or lose it*", neural connections become stronger and more permanent through repeated use. At the same time, connections weaken and prune off if they are not used. Hence, repetition is the key to learning and mastery.

Throughout childhood, adolescence and early adulthood, our PFC remains remarkably plastic, forming extensive connections and networks with other brain regions to develop higher cognitive functions and skills, collectively known as executive functions. The higher level regions of the brain subserving executive function skills have sensitive periods of plasticity in early childhood and again in adolescence (Fig. 2). The underlying process reflecting this wide-ranging plasticity is aptly described in the neuroscience axiom - "*Neurons that fire together, wire together. Neurons that fire apart, wire apart.*"

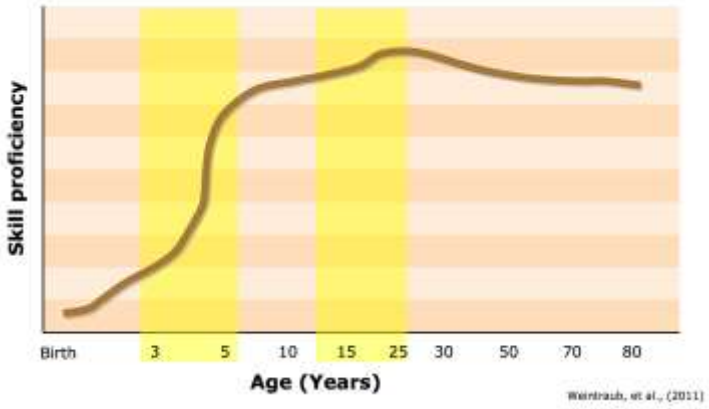

Figure 2. Executive Function Skills Build into the Early Adult Years (pending permission)

Across the lifespan, the amount of physiological effort required to form new neural connections increases over time (Fig. 3). In our adolescence, we have to apply greater effort to learn something new than in childhood. After we reach early adulthood, learning and getting rid of bad habits become increasingly difficult to achieve. Thus, if we want to learn a new skill or get rid of an unwanted habit, it is truly best to start sooner than later.

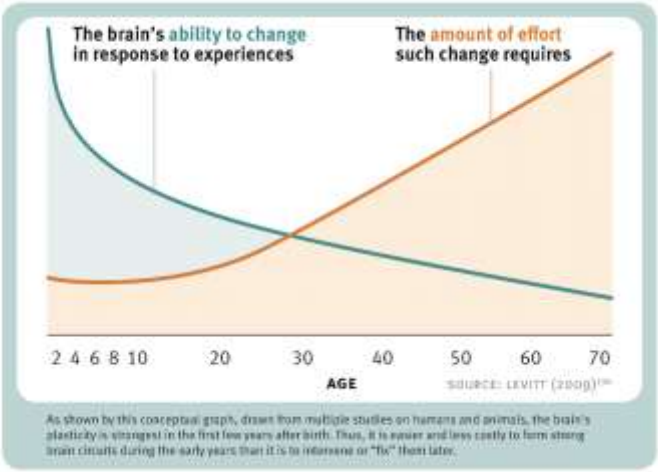

Figure 3. Brain Plasticity Across the Lifespan (reused with permission).

In our middle to late adulthood, our aging brain continues to undergo gradual changes in structure and function. Most of the normal age-related neural changes manifest as declines in cognitive abilities, affecting domains such as attention, learning, memory, and processing speed.

It is important to emphasize that in early childhood, we inherently lack autonomy and capacity to make informed decisions. Consequently, we are fully dependent on our parents, caregivers, and other influential people to nurture and guide us in the proper direction towards a happy and productive life. Furthermore, early life exposure to trauma or adversities can have profound stress-related effects on the brain with potential lifelong consequences.

Under prolonged periods of stress, the activity of the amygdala, our emotional processing center, predominates over our PFC (Fig 4.). This "fight or flight" stress response activates lower level neural pathways, directing our brain's plasticity in favor of adapting to survival mode. Psychosocial stressors in childhood such as poverty, parental separation and divorce, emotional neglect, psychological, physical or sexual abuse, and/or mental illness and substance use in our home environment impact the development of our PFC. We may be at risk of perpetual struggles in life, facing difficulties and failures in school, work, and relationships. Achieving mental wellness in adulthood may be challenging and even perceived as unattainable in extreme cases.

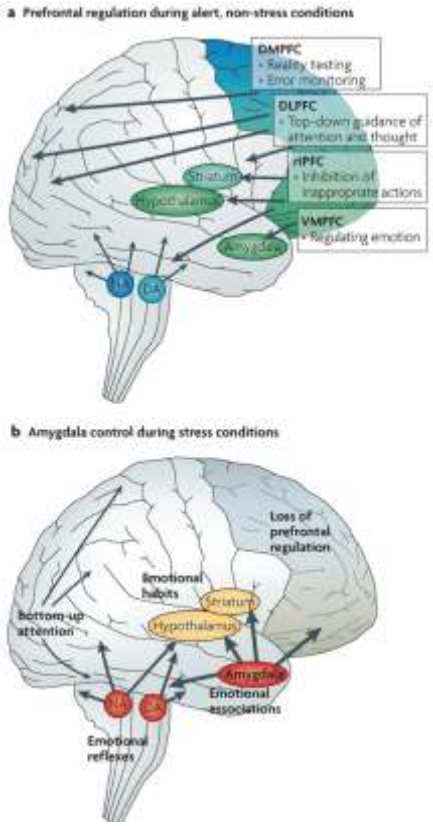

Figure 4. Prefrontal cortical versus amygdala circuits: the switch from non-stress to stress conditions (reused with permission).

It is possible however that the negative effects of past neglect and trauma can be mitigated and even overturned by enhancing neuroplasticity and committing to a life of wellness.

WELLNESS PRACTICES

Neuroplasticity depends on experience. Fundamentally, we need to engage in experiences that provide sensory, emotional, and intellectual arousal. Our brain functions in a nonlinear (inverted-U) shaped relationship with stress level, such that optimal performance is achieved at moderate levels of stress (Fig. 5). Too little or too much arousal impairs functioning. It is important that we stress and challenge ourselves outside of our comfort zone to promote neuroplasticity in favor of growth and resilience (Fig 6.). Equally important is getting sufficient rest and nourishment necessary for the recovery period. The deliberate and active maintenance of this perpetual back-and-forth state of balance between optimal stress and restorative rest is key for driving positive neuroplastic changes. Additionally, it is paramount that we preserve our health by avoiding and minimizing burnout and exposure to harmful

substances. Committing to a proactive lifestyle that incorporates a positive mindset, emotional attunement, and daily wellness habits will foster lifelong growth.

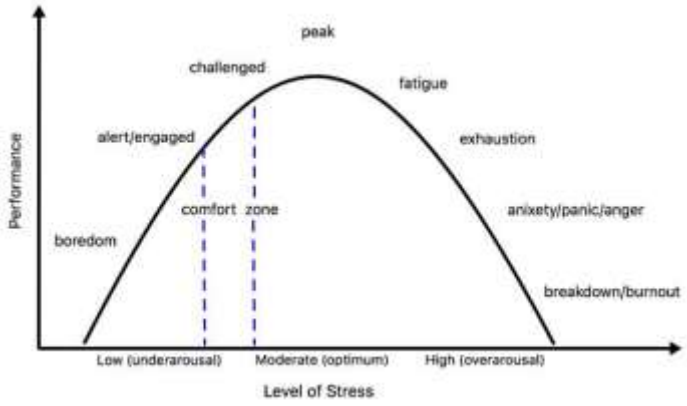

Figure 5. Yerkes-Dodson Law. Inverted-U relationship between Stress/Arousal Level and Performance.

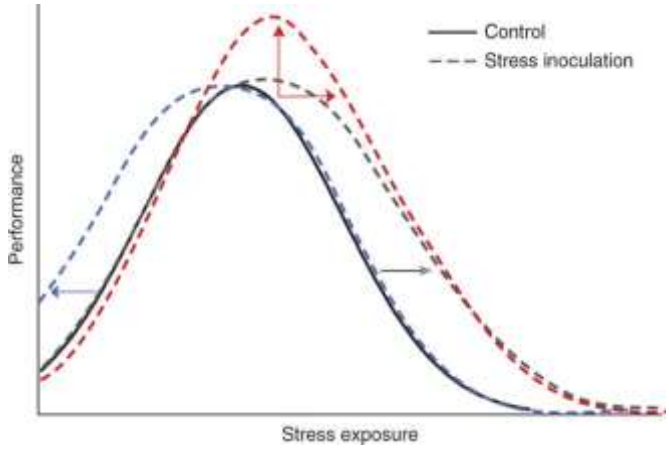

Figure 6. Stress inoculation shifts the inverted U-shaped curve to promote resilience (reused with permission).

Aerobic exercise [1,2]

Aerobic exercise is fundamentally important for neurogenesis and proper maintenance of our body's physiologic "fight/flight/freeze" stress response. Our brain needs to perceive a position of authority and control over our body and environment. When we exercise, our brain is the commander-in-chief directing activity in our heart, lungs, and muscles to mobilize our body for action, empowering us with a sense of influence over our environment and conditions. Aerobic exercise enables our brain and body to sustain and overcome the negative effects of chronic stress through natural physiological processes that are otherwise switched off during prolonged physical inactivity.

Emotional health [3,4]
Fostering emotional awareness, cultivating gratitude, and maintaining a positive mindset are integral to mental wellness. Committing regularly to activities such as journaling, volunteering, social bonding, and psychotherapy drives adaptive neuroplasticity. Emotional awareness and attunement integrate our brain's structural and functional organization, building the foundation for healthy thriving relationships.

Environmental Enrichment [5,6,7,8,9,10]
Engaging in activities that stimulate our senses, challenge our cognitive and motor abilities, and enhance our social interactions are indispensable for maintaining positive neural changes throughout our lifetime. Playing a musical instrument, dancing, aromatherapy, traveling, hiking, and volunteering enrich not only our lives, but also our brain's development. Activities that are novel and challenging in nature, literally and figuratively, further enhance neuroplasticity.

Meditation [11,12,13,14,15]
Meditation induces large scale neuroplasticity to promote higher level development in cortical areas, especially the PFC. Different types of meditation practices exist with each varying in the brain regions that are activated, eliciting distinct neural changes and corresponding benefits. Mindfulness meditation cultivates nonjudgmental awareness, discipline, attention control, and emotional regulation. Transcendental Meditation promotes calmness, restful alertness, and heightened self-awareness. Loving-kindness and compassion meditation foster selflessness, empathy, and positive relationships.

Nutrition and Inflammation [16,17,18,19]
Chronic Inflammation is one of the main underlying causes of mental illness. Our diet and gut microbiome have important roles in affecting our bodies' inflammatory processes, which impact our brain's health in numerous ways. Dietary modification incorporating caloric restriction, anti-inflammatory foods, antioxidants, supplements (omega-3 fatty acids, curcumin), and prebiotics/probiotics help support and promote the brain's health and drive positive plasticity.

Physical Touch [20,21]
Physical touch from another person in the context of comfort and safety provides relief, healing, and pleasure. Massage therapy releases into our body's circulation natural hormones for analgesia, love, and bonding, a physiologic process vital for combating stress and promoting health.

Relaxation and Deep Breathing [22,23,24]
Our breath holds the key to reducing stress and achieving relaxation. Physical exercises that involve controlled breathing techniques such as yoga and tai chi help us endure chronic stress. Deep breathing activates the vagus nerve which is a direct channel to the "rest/digest" branch of the nervous system. Vagal activation counteracts and turns down the stress-inducing activity of the "fight/flight/freeze" branch of the nervous system, favoring healthy neuroplastic changes.

Sleep [25,26]
Sleep is essential for overall health, providing vital rest and restoration for the mind and body. It is particularly necessary for plasticity associated with memory processing. Sleep is also critical for the maintenance of "house-keeping" functions, particularly the removal of waste, via the recently discovered glymphatic waste clearance system.

Substance use
Smoking, alcohol use, and drug abuse have negative effects on neuroplasticity. It is critically important to moderate, minimize, or avoid the exposure to addictive and harmful substances, especially during childhood and adolescence, when drug addictions may potentially become permanent.

Technology
Technological innovation is revolutionizing the health, fitness, and wellness industry. Wearable biosensor devices, electrical brain stimulation headsets, and at-home genetic-testing kits provide fast, convenient, and affordable means for utilizing wellness technologies to drive positive neuroplastic change.
The increasing number of consumer tech gadgets and smartphone apps augment our ability to achieve and maintain success in lifelong wellness practices. Longstanding health-promoting activities like exercise, meditation, mindful breathing, healthy eating, and sleep can now be experienced with data analytics and real-time digital feedback. High-tech features enable us to improve performance and efficiency so we can ultimately reach our health and fitness goals.

The Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative, a multi-agency public-private research project, is pioneering a collaborative mission to accelerate the deeper understanding of the human brain. In combination with ongoing advances in other fields such as machine learning, artificial intelligence, nanotechnology, genetic engineering, augmented and virtual reality, the innovative developments of tomorrow will provide us with infinite practical possibilities in our continual pursuit of wellness.

CLINICAL TREATMENT
Neuroplasticity-based clinical applications are still largely underutilized, despite our revolutionary understanding of the brain from the last few decades. The field of psychiatry and mental health has been slow to shift away from its empirically based diagnostic classification system toward a more sound clinical neuroscience approach.

Today, mental disorders are still commonly perceived as willpower deficiency, character flaws, and personality weaknesses, which almost invariably lead to shame and avoidance of appropriate treatments. If psychiatry redefines itself as a brain-based discipline, we may potentially shed the societal stigma of mental illness.

Approaching mental disorders as a dysfunction in brain plasticity enables us to modify the basis of treatment from symptom management towards the restoration and improvement of a brain's faulty wiring. Mental illness prevention and mental wellness promotion may gain higher recognition and value in public health.

Doctors regarded as *Neuroplasticians* may offer therapies, prescription medications, and other modes of brain-based interventions for treating not only the mentally ill, but also the healthy population. Clinical treatments may even become widely accepted and embraced as a means to enhance brain function, i.e., *Neuroenhancement,* or to optimize the brain's ability to withstand and recover from stress, i.e., *Neuroresilience*.

In people who experience early life trauma, brain injury, and/or suffer from severe mental illness, neuroplasticity-based treatments are quite imperative; positive changes towards achieving mental wellness may not be otherwise possible. For cognitively and emotionally healthy individuals, falling ill may no longer be the primary reason for seeking treatment, but rather the pursuit of optimal and meaningful functioning.

Conclusion and Future

Committing to a life of mental wellness is instrumental in today's world. The world we live in constantly demands change and progress from us both as individuals and as a society. In order to meet the evolving needs of our present and the future, we must harness our brain's plasticity towards positive growth.

Evolutionarily, our human species' rise to the top was due to the brain's capacity for change. Neuroplasticity enabled higher brain regions and functions to emerge, ultimately conferring upon us our quintessential human capabilities of consciousness, language, and tool making. Our newfound capacities gave us the advantage to better problem solve, communicate, and cooperate, thus enhancing our survival, paving the way towards the advancement of humanity. In the history of our civilization, we have traversed two major disruptive changes in our social evolution. The Agricultural Revolution transformed us from exploratory hunter-gatherers to enterprising farmers and settlers. The Industrial Revolution then propelled us forward from our simple and rural lifestyle toward our urban, fast-paced, commercial way of living. Now, we find ourselves navigating through the midst of our third revolutionary period in the Computer and Information Age. The Digital Revolution has empowered us with the once unimaginable ability to access any information and communicate with anyone at any given time, quite literally from our fingertips. Our advanced technologies provide us with endless functional capabilities in everyday life.

In our ever-changing environment, we also face mounting pressures that threaten our state of wellness and well-being. In addition to the fears and concerns of machines replacing human jobs, pervasive world stressors abound, such as global warming, loss of biodiversity and extinction, population growth, resource scarcity, political tension, terrorism, and nuclear threat, further straining our collective psyche.

We all have the ability to survive and thrive in this world. We all possess the most useful and powerful tool in the universe - our human brain. As we learn more about the complexities of the brain, we can better tap its immense potential to orchestrate neuroplastic changes in favor of higher brain regions. We can ascend our personal hierarchy of needs, moving from basic survival towards social connectedness, emotional fulfillment, creative expression, aesthetic gratification, intellectual stimulation, and a greater purpose in life.

Wellness-based neuroplasticity enables us to achieve self-actualization and ultimately undergo a transformation towards self-transcendence. Only when we achieve this dimension of well-being are we able to set aside our own needs to help others fulfill their needs. To this end, we will be able to create a sustainable, integrated, and harmonious path toward personal and global wellness.

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THE GUT-BRAIN AXIS

Gerard Bodeker & Bryan Hoare

From the onset of the twenty-first century there has been a surge of research activity into the human gut and its trillions of bacteria, referred to as the human microbiome. Research has characterized the structure and functional capacity of the bacterial microbiome in both the healthy state and in a range of disease states.

The microbiome includes bacteria, Protozoa, fungi, nematodes and viruses. This separate community of beings encompasses 100-trillion microorganisms, about ten times as many as cells in human body, of which 80% are present in the gut. These microorganisms consists of 3.3million different genes, 150-times more genes than the whole human genome[7] [8]

As noted in a 2017 collection of articles published by Nature on what is known as the gut-brain axis: "It is becoming increasingly evident that bidirectional signaling exists between the gastrointestinal tract and the brain, often involving the gut microbiota. This relationship, commonly dubbed the gut–brain axis (or the microbiota–gut–brain axis), involves various afferent and efferent pathways such as the vagus nerve and the hypothalamic-pituitary-adrenal pathway to regulate aspects of homeostasis such as satiety and hunger, and inflammation. Disruption of the gut–brain axis has been shown to be involved in the pathogenesis of a diverse range of diseases, including Parkinson disease and irritable bowel syndrome. Key aspects of the gut–brain axis include immune, neuroendocrine and neural factors"[9].

What we know from this body of research is that there are more than 500 million information-transmitting neurons embedded in the wall of the human gut, outnumbering those in the spinal cord by five-to-one. These provide the body with what has been referred to as 'a second brain', and is known as the enteric nervous system (ENS). The ENS connects with the Central Nervous System (CNS), the brain, spinal cord, and the autonomic nervous system (ANS), creating a bidirectional gut-brain axis (GBA), which links physiological, behavioral, and cognitive functions with intestinal digestion, absorption and excretion.

Research has found that gut disorders, known as functional gastrointestinal disorders (FGIDs), are associated with the prevalence of both depression and anxiety, and these increase with both the number of FGIDs and the frequency and severity of GI symptoms[10].

And two experimental research studies published in 2017 report that gut bacteria were linked to the development of Alzheimer's disease and that there was a reduction of

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[7] Neufeld KM, Luczynski P, Oriach CS, Dinan TG, Cryan JF. What's bugging your teen?-The microbiota and adolescent mental health. Neuroscience and Biobehavioral Reviews. 2016;PMID 27287940. doi:10.1016/j.neubiorev.2016.06.005

[8] Wang H-X, Wang Y-P. Gut Microbiota-brain Axis. Chinese Medical Journal. 2016;129(19):2373-2380. doi:10.4103/0366-6999.190667.

[9] NATURE, 2017: http://www.nature.com/collections/dyhbndhpzv

[10] Anxiety and Depression Increase in a Stepwise Manner in Parallel With Multiple FGIDs and Symptom Severity and Frequency Pinto-Sanchez, Maria Ines; Ford, Alexander C; Avila, Christian A; Verdu, Elena F; Collins, Stephen M; et al. The American Journal of Gastroenterology; Cambridge110.7 (Jul 2015): 1038-1048.

Abeta amyloid pathology in the absence of gut microbiota[11]. The authors saw these results as indicating a microbial involvement in the development of the beta-amyloid pathology found in Alzheimer's, noting that their findings suggest that microbiota may contribute to the development of neurodegenerative diseases[12].

In research published in August 2016, scientists have shown for the first time that gut bacteria have a direct physical effect on the brain. Researchers have found that myelination of nerves in the prefrontal cortex region of the brain is dependent on the presence of the host microbiome[13]. Myelin, a substance made up of fatty lipids and proteins, accumulates around nerve cells, or neurons. It enables nerve cells to transmit information faster and allows for more complex brain processes. Myelination continues at least through to late childhood/early adolescence and is important for healthy central nervous system functioning.

And preclinical research suggests that the microbiome is necessary for appropriate regulation of miRNA expression in brain regions implicated in anxiety-like behaviors[14].

There is a growing body of research focussing in on the gut-brain axis and the clinical implications for the management of neurodegenerative conditions via nutritional approaches that promote development of healthy gut microbiota. In a review in the Annals of the New York Academy of Sciences, August 2017, Eoin Sherwin and his colleagues write that: "recent preclinical and clinical evidence suggest that targeting the microbiota through prebiotic, probiotic, or dietary interventions may be an effective "psychobiotic" strategy for treating symptoms in mood, neurodevelopmental disorders, and neurodegenerative diseases"[15].

In a major review of stress and the gut-brain axis, the authors note that: "The concept of psychobiotics, bacteria with positive effects on mental health, was coined in 2013 and has recently been expanded to include other microbiota-targeted interventions that can positively modify mental health including in healthy volunteers. Animal studies have led the way in showing that specific strains of *Bifidobacteria, Lactobacillus* or *Bacteroides* can have positive effects on brain and behaviour, including evidence that certain bacteria can enhance cognitive processes and affect

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[11] T. Harach, N. Marungruang, N. Duthilleul, V. Cheatham, K. D. Mc Coy, G. Frisoni, J. J. Neher, F. Fåk, M. Jucker, T. Lasser & T. Bolmont. 2017. Reduction of Abeta amyloid pathology in APPPS1 transgenic mice in the absence of gut microbiota. Scientific Reports | 7:41802 | DOI: 10.1038/srep41802

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[13] A E Hoban, R M Stilling, F J Ryan, F Shanahan, T G Dinan, M J Claesson, G Clarke and J F Cryan. Regulation of prefrontal cortex myelination by the microbiota. Translational Psychiatry (2016) 6, e774; doi:10.1038/tp.2016.42 Published online 5 April 2016. http://www.nature.com/doifinder/10.1038/tp.2016.42

[14] Hoban AE, Stilling RM et al. Microbial regulation of microRNA expression in the amygdala and prefrontal cortex. Microbiome (2017) 5:102. DOI 10.1186/s40168-017-0321-3

[15] Eoin Sherwin, Timothy G. Dinan, John F. Cryan. Recent developments in understanding the role of the gut microbiota in brain health and disease. Annals of the New York Academy of Sciences. 2 August, 2017. DOI: 10.1111/nyas.13416

emotional learning. However, results from these studies are only slowly being translated to humans (..) the relationship between diet and the microbiota-gut-brain axis is ripe for exploitation to develop therapeutic strategies for treating stress-related disorders'' (p.9)[16].

A number of groups provide commercial testing, such as Map My Gut (https://mapmygut.com/). A requirement of testing with these organizations is that the tests are undertaken in conjunction with accredited health professionals (e.g. dieticians), which means that guidance and support are on hand to support an evolving wellness lifestyle.

In summary, the state of the field in 2018 is that:

- The microbiome-gut-brain axis is emerging as a key pathway for modulating behavior.
- The routes of communication between the microbiota and the brain are slowly being resolved.
- The immune system, altered barrier function, hormone secretion, production of metabolites, including SCFAs, activation of enteric nervous system, and vagus nerve are among the pathways being investigated.
- Dysregulation of the gut microbiota composition has been identified in a number of psychiatric disorders, including depression.
- Psychobiotics, bacteria that have a beneficial effect upon behavior and mood, are being investigated for potential therapeutic interventions.

[16] Foster, J.A., et al., Stress & the gut-brain axis: Regulation by the microbiome, Neurobiology of Stress (2017), http://dx.doi.org/10.1016/j.ynstr.2017.03.001

NUTRITION AND THE BRAIN

Gerard Bodeker

New research has been focussing on understanding the pathways that mediate relationships between diet, nutrition and mental health. Findings point to the immune system, oxidative biology, brain plasticity and the microbiome-gut-brain axis as key targets for nutritional interventions.

Writing in Lancet Psychiatry Dr Jerome Sarris and colleagues of the International Society for Nutritional Psychiatry Research, report that:
''A traditional whole-food diet, consisting of higher intakes of foods such as vegetables, fruits, seafood, whole grains, lean meat, nuts, and legumes, with avoidance of processed foods, is more likely to provide the nutrients that afford resiliency against the pathogenesis of mental disorders. The mechanisms by which nutrition might affect mental health are, at least superficially, quite obvious: the human brain operates at a very high metabolic rate, and uses a substantial proportion of total energy and nutrient intake; in both structure and function (including intracellular and intercellular communication), it is reliant on amino acids, fats, vitamins, and minerals or trace elements. Dietary habits modulate the functioning of the immune system, which also moderates the risk for depression. The antioxidant defence system, which is also implicated in mental disorders, operates with the support of nutrient cofactors and phytochemicals. Additionally, neurotrophic factors make essential contributions to neuronal plasticity and repair mechanisms throughout life, and these too are affected by nutritional factors''[17].

A systematic review has confirmed a relation between unhealthy dietary patterns and poorer mental health in children and adolescents. A habitually poor diet (e.g., increased consumption of Western processed foods) was independently associated with a greater likelihood of or risk for depression and anxiety. The study also found a consistent trend for the relationship between good-quality diet and better mental health[18].

In view of the early age of onset for depression and anxiety, these data suggest that diet is a key modifiable intervention target for prevention of the initial incidence of common mental disorders.

There is now evidence that some nutritional supplements influence neurochemical modulation that in turn benefits the management of mental disorders.

These supplements include:

- omega-3 fatty acids
- S-adenosyl methionine (SAMe)
- N-acetyl cysteine (NAC)
- zinc
- B vitamins (including folic acid)
- vitamin D

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[17] Sarris, J, Mischoulon, D, and Schweitzer, I. Omega-3 for bipolar disorder: meta-analyses of use in mania and bipolar depression. *J Clin Psychiatry*. 2012; **73**: 81–86
[18] O'Neil, A, Quirk, SE, Housden, S et al. Relationship between diet and mental health in children and adolescents: a systematic review. *Am J Public Health*. 2014; **104**: e31–e42

Clinical studies[19] [20] [21]have found omega-3 fatty acids beneficial in the treatment of bipolar depression, post-traumatic stress disorder, major depression, and the prevention of psychosis.

In a study on cognitive functioning and brain aging, higher levels of B family vitamins, as well as vitamins C, D, and E were all associated with higher scores on cognitive tests. The same positive relationship was found for omega-3 fatty acids, which have previously been linked to better brain health. But, those with higher levels of trans fats - found in a variety of junk foods – performed more poorly in thinking and memory tests. Their MRI scans also revealed more brain shrinkage than people who had lower trans fats levels. The study found that overall, nutrition accounted for 37 percent of the variation in brain volume[22].

And a landmark study has found that inexpensive B vitamins stopped shrinkage in the area of the brain that defines Alzheimer's disease, called the medial temporal lobe. The study, led by Professor David Smith from the University of Oxford, gave a combination of vitamin B6 (20mg), B12 (500mcg) and folic acid (800mcg) or placebo pills to people with mild cognitive impairment (MCI), the stage before a diagnosis of dementia or Alzheimer's. In those with high homocysteine levels, the specific areas of the brain associated with Alzheimer's disease shrank 8 times more slowly in those taking B vitamins than in those on the placebo. This is strongly indicative that the B vitamins may be substantially slowing down, or even potentially arresting, the disease process in those with early stage cognitive decline. This is the first treatment that has been shown to do this[23].

In addition to vitamin supplementation, there is a strong current in the wellness market to supplementation with pre- and probiotics as well as plant extracts known as polyphenols.

Prebiotics are non-digestible foods which resist gastric acidity, absorption in the upper GI tract, can be selectively fermented and stimulate the growth of bacteria, by providing

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[19] Felice N. Jacka. Where to Next? Nutritional Psychiatry: EBioMedicine. 2017 Mar; 17: 24–29. Published online 2017 Feb 21. doi: 10.1016/j.ebiom.2017.02.020

[20] Mischoulon, D and Freeman, MP. Omega-3 fatty acids in psychiatry. *Psychiatr Clin North Am*. 2013;**36**: 15–23

[21] Sarris, J, Mischoulon, D, and Schweitzer, I. Omega-3 for bipolar disorder: meta-analyses of use in mania and bipolar depression. *J Clin Psychiatry*. 2012; **73**: 81–86

[22] G.L. Bowman, ND, MPH, L.C. Silbert, MD, MCR, D. Howieson, PhD, H.H. Dodge, PhD, M.G. Traber, PhD, B. Frei, PhD, J.A. Kaye, MD, J. Shannon, PhD, MPH and J.F. Quinn, MD. Nutrient biomarker patterns, cognitive function, and MRI measures of brain aging. Neurology. 2012 Jan 24; 78(4): 241–249. doi: 10.1212/WNL.0b013e3182436598

[23] Gwenaëlle Douaud, Helga Refsum, Celeste A. de Jager, Robin Jacoby, Thomas E. Nichols, Stephen M. Smith, and A. David Smith. Preventing Alzheimer's disease-related gray matter atrophy by B-vitamin treatment. Proc Natl Acad Sci U S A. 2013 Jun 4; 110(23): 9523–9528. Published online 2013 May 20. doi: 10.1073/pnas.1301816110 PMCID: PMC3677457.

energy for their expansion' especially for bifobacteria and lactobaccili. It is estimated that about 30 g of bacteria are produced for every 100 g of carbohydrate that is fermented. Prebiotics can be found in foods such as leeks, bananas (especially unripe), asparagus, chicory, Jerusalem artichokes, garlic, onions, wheat, oats, soybeans and psyllium (*Plantago ovata*).

Polyphenols are micronutrients that we get through certain plant-based foods. Readily absorbed, they pass through the small intestine to encounter the microbes in the colon. The literature suggests that polyphenols balance the gut microbiota by stimulating beneficial bacteria and inhibiting pathogenic microbes, contributing to gastrointestinal health, and potentially exerting a prebiotic effect. There is a growing body of evidence suggesting that polyphenols beneficially affect human brain function[24].

Probiotics are live microorganisms that provide health benefits when consumed. Noting the still-evolving science of probiotics, WebMD advises:
"When you lose "good" bacteria in your body (like after you take antibiotics, for example), probiotics can help replace them. They can help balance your "good" and "bad" bacteria to keep your body working like it should"[25].

Fermented foods are a traditional source of probiotics. Among the best known are yogurt from Europe and kimchi, the fermented cabbage dish, from Korea. Yet, most traditional societies have used fermentation as a means of preserving foods, benefitting at the same time from the microorganisms that fermentation generates. For example, the book "Indigenous Fermented Foods of South Asia" (Joshi, 2015), covers the foods of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, Maldives, and Afghanistan, and delves into the history, food culture, and importance of indigenous fermented foods[26]. At the same time, it goes into the microbiology, biochemistry, biotechnology, quality, and nutritional value of various foods. A similar approach is taken in the book "Indigenous Fermented Foods of Southeast Asia" (J. David Owens, 2014), which examines some indigenous fermented foods of Thailand, Vietnam, Indonesia, Malaysia, and the Philippines, while focusing on the chemical, microbiological, and technological factors associated with their manufacture, quality, and safety[27].

In the West, probiotics in supplement form have become a major segment of the wellness market, with the probiotics market size projected to exceed USD$64 billion by 2023[28]. Given the size and financial allure of this market segment, the wellness community needs to be aware and take the lead in ensuring that information that is shared is valid, properly reviewed, and that there is clear evidence of causality. Special care needs to be taken in assessing and citing animal studies which, while helpful, do not replicate real-life situations for humans.

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[24] David O. Kennedy. Polyphenols and the Human Brain: Plant "Secondary Metabolite" Ecologic Roles and Endogenous Signaling Functions Drive Benefits. Adv Nutr vol. 5: 515-533, 2014. doi: 10.3945/an.114.006320

[25] http://www.webmd.com/digestive-disorders/what-are-probiotics?iframe=true&width=100%25&height=100%25#1

[26] Indigenous Fermented Foods of South Asia"(Joshi, 2015)

[27] Indigenous Fermented Foods of Southeast Asia" (J. David Owens, 2014)

[28] http://www.prnewswire.com/news-releases/probiotics-market-size-to-exceed-usd-64-billion-by-2023-global-market-insights-inc-578769201.html

It has also been pointed out in the scientific literature that care needs to be taken in not extrapolating data and sensationalizing results, making gut microbiome approaches the cure-all for living an unhealthy lifestyle[29]. Many studies are experimental and not clinical and this needs to be noted in extrapolating from them. And it is important that this not become an area where unqualified practitioners take commercial advantage of this important direction in wellness and clinical care to create substandard services that may also endanger the health of clients.

The Mediterranean Diet is globally promoted as the dietary solution to non-communicable diseases. While it clearly is a beneficial dietary pathway to reduce inflammation and promote healthy nutrition, it is also a Western diet, studied by Westerners on Westerners, and is being recommended for the 75% of the world's population that is *not* Western[30].

In Asia, the Japanese diet is well studied and there are commonalities with the Mediterranean Diet. They share: high intake of unrefined carbohydrates, moderate intake of protein, healthy fat profile, low glycemic load, less inflammation and oxidative stress, and potential modulation of ageing-related pathways. A point of difference is that Asian diets typically include pharmacologically potent ingredients such as turmeric in South and Southeast Asia, umeboshi plums and reishi mushrooms in Japan, goji berry, ginkgo and licorice root in China, ginseng in Korea, the brain tonic *Centella asiatica* in Thailand and Malaysia, etc.

The PURE Study, published in The Lancet in August 2017, collected data on more than 135 000 individuals from 18 countries for an average of 7·4 years. PURE assessed the association of nutrients with cardiovascular disease and mortality in low- and middle-income populations. Findings showed that higher intakes of fats (including saturated fatty acids, monounsaturated fatty acids, and total polyunsaturated fatty acids) and animal protein were each associated with lower mortality. Carbohydrate intake was associated with increased mortality[31].

The risk of total and non-cardiovascular mortality was in the order of 22–23% lower for people consuming at least three servings per day of fruits, vegetables, and legumes, compared with participants who consumed less than one serving per day of these foods[32].

Other research is looking at food additives as a source of disturbance to gut microbiota and through this to changes leading to cancer risk. Experimental findings

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[31] Dehghan M, Mente A, Zhang X, et al, on behalf of the Prospective Urban Rural Epidemiology (PURE) study investigators. Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from five continents (PURE): a prospective cohort study. Lancet 2017; published online Aug 29. http://dx.doi.org/10.1016/S0140-6736(17)32252-3.

[32] Miller V, Mente A, Dehghan M, et al. Fruit, vegetable, and legume intake, and cardiovascular disease and deaths in 18 countries (Prospective Urban Rural Epidemiology [PURE]): a prospective cohort study. Lancet 2017; published online Aug 29. http://dx.doi.org/10.1016/S0140-6736(17)32253-5.

on the role of common dietary emulsifiers that have an effect on gut microbiota support the notion that changing the composition of gut microbiota causes low-grade inflammation in a way that promotes colorectal cancer[33].

Clearly, there are implications for mental wellness in all of these findings. Drawing on nutritional studies and meta-analyses of nutrition and mental health research, the Mental Health Foundation of the UK notes that: "Nearly two thirds of those who do not report daily mental health problems eat fresh fruit or fruit juice every day, compared with less than half of those who do report daily mental health problems. This pattern is similar for fresh vegetables and salad. Those who report some level of mental health problem also eat fewer healthy foods (fresh fruit and vegetables, organic foods and meals made from scratch) and more unhealthy foods (chips and crisps, chocolate, ready meals and takeaways)."https://www.mentalhealth.org.uk/a-to-z/d/diet-and-mental-health

[33] Benoit Chassaing, Omry Koren, Julia K. Goodrich, Angela C. Poole, Shanthi Srinivasan, Ruth E. Ley & Andrew T. Gewirtz. Dietary emulsifiers impact the mouse gut microbiota promoting colitis and metabolic syndrome. Nature 519, 92–96 (05 March 2015) doi:10.1038/nature14232

INFLAMMATION AND MENTAL HEALTH

Gerard Bodeker

Sugar, saturated fats, trans fats, refined carbohydrates, and alcohol have all been found to cause inflammation in the body. Inflammation is in turn associated with pain, cancer, diabetes and obesity and arthritis among others. Extensive research has shown that brain inflammation is connected to virtually all types of mental illness. Mood disorders such as depression and anxiety, as well as more serious conditions like autism, dementia, and even schizophrenia, have all been linked to inflammation of the brain.

In research examining the mechanisms of this effect, pro-inflammatory cytokines (signalling molecules excreted from immune cells) have been found induce not only symptoms of sickness, but also true major depressive disorders in physically ill patients with no previous history of mental disorders[34] [35].

The growing levels of mortality associated with the consumption of antidepressants[36] has led researchers to examine anti-inflammatory agents as a potentially viable means of managing the condition.

A Cambridge University team conducted a systematic review of studies assessing the effects of anti-cytokine drugs in people with chronic inflammatory conditions and found that the anti-inflammatory drugs also improved the symptoms of depression[37]. Elsewhere, the Cambridge team have noted that, given that just a third of depressed patients have elevated circulating acute phase proteins (e.g. C-reactive protein - CRP), and a third of patients are antidepressant resistant, inflammation is likely to be relevant for some but *not all* cases of depression[38].

Emerging evidence indicates anti-inflammatory agents may be effective treatments for patients with depression and psychosis particularly those with evidence of inflammation, the focus of a new speciality known as *Immunopsychiatry*.

Noting that inflammation might be a common mechanism underlying the comorbidities between depression, schizophrenia, coronary heart disease and diabetes mellitus, researchers highlight that anti-inflammatory agents may be

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[37] Kappelmann N, Lewis G, Dantzer R, Jones PB, Khandaker GM. (2016), "Antidepressant activity of anti-cytokine treatment: a systematic review and meta-analysis of clinical trials of chronic inflammatory conditions." *Molecular Psychiatry.* 2016 Oct 18. doi: 10.1038/mp.2016.167.

[38] G. M. Khandaker, R. Dantzer and P. B. Jones . Immunopsychiatry: important facts. Psychological Medicine, Volume 47, Issue 13 September 2017 , pp. 2229-2237.

effective treatments for patients with depression and psychosis particularly those with evidence of inflammation[39].

Wellness approaches to tackling inflammation focus largely on diet and supplements. Numerous studies have demonstrated the potent anti-inflammatory effects of turmeric, which in turn accounts for this being one of the biggest selling products in the wellness supplement market[40].

Foods that contribute to inflammation include sodas and refined carbohydrates, as well as red meat and processed meats. Anti-inflammatory foods include fruits and vegetables such as blueberries, apples, and leafy greens that are high in natural antioxidants and polyphenols.

Understanding immunity and the brain is key to developing treatments for inflammation that causes brain disorders. Yet, there is much yet to be learned about the brain, as the newly announced International Brain Lab recognizes. Modeled on big physics projects, the International Brain Lab will bring together some of the world's pre-eminent neuroscientists to probe in an integrated way how the brain functions. The IBL will aim to generate and test unifying theories about how the brain encodes and computes information – seeking to come up with the equivalent of physicists' standard model[41].

In one example of important discoveries about the brain continuing to be made, a team from the University of Virginia's School of Medicine reported in Nature in July 2015 that they had discovered the central nervous system's lymphatic system. Previously, the mechanisms governing the entrance and exit of immune cells from the central nervous system remained poorly understood. The central nervous system's lymphatic system was found to be in the form of functional lymphatic vessels lining the dural sinuses. The study authors note that malfunction of the meningeal lymphatic vessels could be a root cause of a variety of neurological disorders. The result would be altered immunity which is a fundamental player in conditions such as multiple sclerosis, Alzheimer's disease, and some forms of primary lymphoedema that are associated with neurological disorders[42].

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[39] Robert Dantzer, Jason C. O'Connor, Gregory G. Freund, Rodney W. Johnson & Keith W. Kelley. From inflammation to sickness and depression: when the immune system subjugates the brain. Nature Reviews Neuroscience 9, 46-56 (January 2008) | doi:10.1038/nrn2297

[40] http://www.makersnutrition.com/news/2017-05-11-the-turmeric-curcumin-revolution/

[41] A. Abbott. Researchers unite in quest for 'standard model' of the brain. Nature. 549, 319–320 (21 September 2017) doi:10.1038/549319a

[42] Antoine Louveau, Igor Smirnov, Timothy J. Keyes, Jacob D. Eccles, Sherin J. Rouhani, J. David Peske, Noel C. Derecki, David Castle, James W. Mandell, Kevin S. Lee, Tajie H. Harris & Jonathan Kipni. Structural and functional features of central nervous system lymphatic vessels. Nature, 16 July 2015, 523. 337- 341.

PATHOGENS AND MENTAL HEALTH

Gerard Bodeker

An emerging body of research is pointing to the role that pathogens can play in brain disorders and mental health conditions.

A Danish study published in *JAMA Psychiatry* in 2013 looked at the medical records of over 3 million people and found that any history of hospitalization for infection was associated with a 62 percent increased risk of later developing a mood disorder, including depression and bipolar disorder[43].

One theory is that pathogens acting directly on the brain may result in psychiatric symptoms, but also that autoimmune activity — or the body's immune system attacking itself — triggered by infection may also contribute.

The Danish study reported that a past history of an autoimmune disorder increases the risk of a future mood disorder by 45 percent.

Other research has documented that several risk factors for the development of schizophrenia can be linked through a common pathway in the intestinal tract. Bidirectional communication exists between the brain and the gut that uses neural, hormonal, and immunological routes. Studies have found an increased incidence of gastrointestinal (GI) barrier dysfunction, food antigen sensitivity, inflammation, and the metabolic syndrome in schizophrenia[44].

In a Johns Hopkins study, researchers found that a history of *Candida* yeast infections was more common in a group of men with schizophrenia or bipolar disorder than in those without these disorders, and that women with schizophrenia or bipolar disorder who tested positive for *Candida* performed worse on a standard memory test than women with schizophrenia or bipolar disorder who had no evidence of past infection. While this research was not able to establish a causal association between *Candida* and mental illness and memory impairment, the authors raise the intriguing possibility that exposure to *Candida albicans* could be a formative step in the development of schizophrenia. The findings support a more detailed examination into the role of lifestyle, immune system weaknesses and gut-brain connections as contributing factors to the risk of psychiatric disorders and memory impairment[45].

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[43] Michael E. Benros, Berit L. Waltoft, MSc, Merete Nordentoft, DrMedSc, et al. Autoimmune Diseases and Severe Infections as Risk Factors for Mood Disorders A Nationwide Study. *JAMA Psychiatry.* 2013;70(8):812-820. doi:10.1001/jamapsychiatry.2013.1111

[44] Katlyn Nemani, Reza Hosseini Ghomi, BethMcCormick, Xiaoduo Fan. Schizophrenia and the gut–brain axis. Progress in Neuro-Psychopharmacology and Biological Psychiatry. Volume 56, 2 January 2015, Pages 155-160.

[45] Emily G Severance, Kristin L Gressitt, Catherine R Stallings, Emily Katsafanas, Lucy A Schweinfurth, Christina L Savage, Maria B Adamos, Kevin M Sweeney, Andrea E Origoni, Sunil Khushalani, F Markus Leweke, Faith B Dickerson & Robert H Yolken. *Candida albicans* exposures, sex specificity and cognitive deficits in schizophrenia and bipolar disorder. *npj Schizophrenia* 2, Article number: 16018 (2016) • doi:10.1038/npjschz.2016.18

In other research, investigators looked at donated brain samples of 10 people without dementia and 10 people with dementia. They found the bacteria that causes gum infection known as periodontitis, *Porphyromonas gingivalis,* in the brains of four of those with dementia. This bacteria may play a role in changes in the brain in Alzheimer's disease, contributing to symptoms including confusion and failing memory[46]. Other research has found that the pathogenic effects of *P. gingivalis* are related to the overall immunosuppression of the host[47].

As the focus of the Mental Wellness Initiative is on wellness rather than on medical pathology, this important area is a little outside of the purview of the current work of the Initiative.

What is of relevance however, is that there are wellness modalities that merit investigation for their role in protecting the brain against the risk of pathogens invading.

For instance, the research that has documented the role of gut microbes in schizophrenia raises the prospect that a subgroup of patients may benefit from the initiation of a gluten and casein-free diet. And also that antimicrobials and probiotics have therapeutic potential for reducing the metabolic dysfunction and immune dysregulation seen in patients with schizophrenia.

In Asian traditions of medicine and wellness, gut cleansing through traditional 'detox' methods is a well-established practice. Also, nasal cleansing using warm water and, sometimes, medicated oil is standard practice in Ayurvedic medicine and may have anti-pathogenic and anti-inflammatory effects. The Ayurvedic use of dental twigs or dental powder from the neem tree (*Azadirachta indica*) for brushing teeth is pertinent. Neem is known to be highly antimicrobial and anti-inflammatory, is a likely means of reducing gum inflammation which in turn can be a risk factor for systemic inflammation, including brain inflammation[48]. These are all areas of importance for future research into wellness pathways to brain health and mental wellness. And, obviously, foods and plant-based medicines and supplements that promote immunity will merit investigation in the future as new means are examined for preventing the effects of pathogens from impairing brain functioning either directly or through a more systemic impact on immunity.

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REST

Gerard Bodeker

SLEEP

Using a newly developed Living Well Index, researchers from Oxford Economics and the National Centre for Social Research in the UK reported in September 2017 that: "a good night's sleep is worth more than quadrupling your disposable income. Better sleep is the biggest single contributor to living better"
https://www.about.sainsburys.co.uk/about-us/live-well-for-less/living-well-index .

And poor sleep is linked with anxiety and depression. Not surprisingly, anxiety and depression are associated with poor sleep. And sleep deprivation is clearly linked to heart disease and strokes.

A growing body of scientific and popular literature has focused on the influence of such factors as external light (including from mobile devices), sugary and caffeinated beverages, noise, time of going to bed, etc. on sleep quality.

More recently, researchers at University of Basel in Switzerland have found that people tend to get lower-quality sleep around the time of full moons, losing about 20 minutes of sleep compared to what they get during a new moon[49]. Study participants were given rooms where there were no windows, so there was no way of seeing the moon or light. The full moon was associated with a 30 percent decrease in deep sleep duration, a 20-minute reduction in total sleep time, and a delay in sleep latency of about five minutes. On the days leading up to the full moon, men and women both had lower evening levels of melatonin. The researchers had no clear explanation of how, without time cues, the body was reacting to the phases of the moon, yet clearly there is a connection between the brain and the influence of the planets – the moon in this case – that affects human biology, sleep and, as a result, physical and mental health.

A large number of investigations have shown the association of different lunar phases with the mental health or physical health and diseases, physical activity pattern, and reproduction of humans. A review of these studies begins by pointing out that, according to the position of the moon in its orbit, the gravitational pull of the moon on earth changes and the amplitude of ocean tides also vary. These effects, possibly due to disturbance of the earth's electromagnetic field or to changes of the lunar gravitational force on earth, are argued to affect the "biological tide" during different lunar phases. The result is altered autonomic neural activity and cardiovascular activity during different lunar phases. Although little studied by neuroscientists, this is potentially a fundamental cause of changes in human physiology and associated psychological functioning[50].

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[49] Christian Cajochen, Songül Altanay-Ekici, Mirjam Münch, Sylvia Frey, Vera Knoblauch, Anna Wirz-Justice. 2013. Evidence that the Lunar Cycle Influences Human Sleep. Current Biology, Volume 23, Issue 15, p1485–1488.

[50] Ujjwal Chakraborty. 2014. Effects of different phases of the lunar month on humans. Biological Rhythm Research. 45, 3, 383-396.
https://doi.org/10.1080/09291016.2013.830508

MEDITATION

Meditation was a little understood spiritual development technique of both the East and West until 1970, when SCIENCE published the first rigorous scientific research paper showing that during meditation, oxygen consumption and heart rate decreased, skin resistance increased, and the electroencephalogram showed specific changes in certain brain frequencies. Led by Dr. RK Wallace, this study, which was measuring the physiological effects of the Transcendental Meditation (TM) technique, distinguished meditation from other resting states and began the steady growth of meditation research that has progressed unabated for the almost half century that has followed[51].

Four and a half decades after Dr. Wallace's original research in SCIENCE, a meta-analysis in the Journal of the American Medical Association identified almost 19,000 studies on different forms of meditation[52]. Four decades of studies highlight the effects of meditation in enhancing immunity, reducing depression and anxiety, improving academic performance, reducing age-related cognitive decline, increasing happiness and quality of life, and managing and reducing trauma.

In the earlier section on Brain Plasticity in this White Paper, Dr Lawrence Choy has detailed some of the brain changes associated with the practice of meditation. These include enhanced neural plasticity and increased grey and white matter development in the brains of meditators. The question necessarily arises as to how this translates into life benefits.

Recent studies on the technique studied by RK Wallace, TM, have found reductions in anxiety [53] and post-traumatic stress[54], improvement in the mental health of caregivers[55] and, in a study on survivors of the Japanese earthquake-tsunami of 2011, improvements in both mental and physical symptoms following instruction in this meditation technique[56].

In research at the Massachusetts General Hospital, magnetic resonance (MR) images were taken of the brain structure of 16 study participants two weeks before and after they took part in an eight-week mindfulness meditation program. The research team found increased grey-matter density in the hippocampus, known to be important for

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[51] Wallace RK. Physiological effects of transcendental meditation. Science. 1970 Mar 27;167(3926):1751-4.

[52] Madhav Goyal, et al. Meditation Programs for Psychological Stress and Well-being. A Systematic Review and Meta Analysis. JAMA Intern Med. 2014;174(3):357-368. doi:10.1001/jamainternmed.2013.13018

[53] Tomljenović H1, Begić D, Maštrović Z. Changes in trait brainwave power and coherence, state and trait anxiety after three-month transcendental meditation (TM) practice. Psychiatr Danub. 2016 Mar;28(1):63-72.

[54] Rees, Brian; Travis, Fred; Shapiro, David; Chant, Ruth. 2014. "Significant Reductions in Posttraumatic Stress Symptoms in Congolese Refugees Within 10 days of Transcendental Meditation Practice." *Journal of Traumatic Stress*. 27, 112–115.

[55] Sanford Nidich, Randi J Nidich , John Salerno, Brooke Hadfield and Charles Elder. Stress Reduction with the Transcendental Meditation Program in Caregivers: A Pilot Study. Int Arch Nurs Health Care 2015, 1:2.

[56] Yoshimura M, Kurokawa E, Noda T, Hineno K, Tanaka Y, Kawai Y, Dillbeck MC. 2015. Disaster relief for the Japanese earthquake-tsunami of 2011: stress reduction through the Transcendental Meditation® technique. Psychol Rep. 2015 Aug;117(1):206-16. doi: 10.2466/02.13.PR0.117c11z6.

learning and memory, and in structures associated with self-awareness, compassion, and introspection. Participants' reports of reduced stress were correlated with decreased grey-matter density in the amygdala, which is known to play an important role in anxiety and stress[57].

As it turns out, even given the early brain changes seen in the eight week study at the Massachusetts General Hospital, the length of time a person has been meditating seems to make a difference to brain benefits. Researchers at the UCLA Laboratory of Neuro Imaging found that long-term meditators have larger amounts of gyrification ("folding" of the cortex, which may allow the brain to process information faster) than people who do not meditate. Further, a direct correlation was found between the amount of gyrification and the number of meditation years, possibly providing further proof of the brain's neuroplasticity, or ability to adapt to environmental changes[58].

In research on mindfulness meditation, Elissa Eppel, Nobel Laureate Elizabeth Blackburn and their colleagues reviewed data linking telomere length to cognitive stress and stress arousal and presented data linking cognitive appraisal to telomere length. They proposed that some forms of meditation may have salutary effects on telomere length by reducing cognitive stress and stress arousal and increasing positive states of mind and hormonal factors that may promote telomere maintenance[59]. Telomeres are the protective caps that are found on the ends of the chromosomes of humans and animals. With DNA replication telomeres can shorten, so that older people tend to have shorter telomeres.

Subsequent research has borne out the link between meditation and telomere length, with results showing that mindfulness meditation leads to increased telomerase activity in peripheral blood mononuclear cells[60] and TM meditators demonstrating increased telomerase gene expression[61]. These studies point to the effects of meditation in slowing biological ageing.

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[57] Britta K. Hölzel, James Carmody, Mark Vangel, Christina Congleton, Sita M. Yerramsetti, Tim Gard and Sara W. Lazara. Mindfulness practice leads to increases in regional brain gray matter density. Psychiatry Res. 2011 Jan 30; 191(1): 36–43. Published online 2010 Nov 10. doi: 10.1016/j.pscychresns.2010.08.006.

[58] Eileen Luders, Florian Kurth, Emeran A. Mayer, Arthur W. Toga, Katherine L. Narr, and Christian Gaser. The Unique Brain Anatomy of Meditation Practitioners: Alterations in Cortical Gyrification. Front Hum Neurosci. 2012; 6: 34. Published online 2012 Feb 29. doi: 10.3389/fnhum.2012.00034.

[59] Elissa Epel, PhD., Jennifer Daubenmier, Ph.D., Judith T. Moskowitz, Ph.D., Susan Folkman, PhD., and Elizabeth Blackburn, PhD. 2009. Can meditation slow rate of cellular aging? Cognitive stress, mindfulness, and telomeres. Ann N Y Acad Sci. 2009 Aug; 1172: 34–53. doi: 10.1111/j.1749-6632.2009.04414

[60] Schutte NS, Malouff JM. 2014. A meta-analytic review of the effects of mindfulness meditation on telomerase activity. Psychoneuroendocrinology; 42:45-8. doi: 10.1016/j.psyneuen.2013.12.017.

[61] Duraimani S, Schneider RH, Randall OS, Nidich SI, Xu S, Ketete M, et al. (2015) Effects of Lifestyle Modification on Telomerase Gene Expression in Hypertensive Patients: A Pilot Trial of Stress Reduction and Health Education Programs in African Americans. PLoS ONE 10(11): e0142689. https://doi.org/10.1371/journal.pone.0142689

Elizabeth Blackburn and Elissa Eppel present these and other findings on the effects of lifestyle change on telomeres in their excellent book *The Telomere Effect: A Revolutionary Approach to Living Younger, Healthier, Longer* (2017).

With benefits ranging from enhanced mental wellbeing through to reduction of deeply traumatic stress, from changes in brain structure and functioning through to changes in gene expression and telomere length and reduced age related decline, meditation surely stands as a primary pathway for lifelong enhancement of physical and mental wellness.

MASSAGE

The US National Institutes of Health National Center for Complementary and Integrative Health has the following to say about massage[62].

What the Science Says About the Effectiveness of Massage

A lot of the scientific research on massage therapy is preliminary or conflicting, but much of the evidence points toward beneficial effects on pain and other symptoms associated with a number of different conditions. Much of the evidence suggests that these effects are short term and that people need to keep getting massages for the benefits to continue.

Researchers have studied the effects of massage for many conditions. Some that they have studied more extensively are the following

Pain

- A 2008 research review and 2011 NCCIH-funded clinical trial concluded that massage may be useful for chronic low-back pain.
- Massage may help with chronic neck pain, a 2009 NCCIH-funded clinical trial reported.
- Massage may help with pain due to osteoarthritis of the knee, according to a 2012 NCCIH-funded study.
- Studies suggest that for women in labor, massage provided some pain relief and increased their satisfaction with other forms of pain relief, but the evidence isn't strong, a 2012 review concluded.

Cancer

Numerous research reviews and clinical studies have suggested that at least for the short term, massage therapy for cancer patients may reduce pain, promote relaxation, and boost mood. However, the National Cancer Institute urges massage therapists to take specific precautions with cancer patients and avoid massaging:

- Open wounds, bruises, or areas with skin breakdown
- Directly over the tumor site
- Areas with a blood clot in a vein
- Sensitive areas following radiation therapy.

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[62] NCCIH: https://nccih.nih.gov/health/massage/massageintroduction.htm

Mental Health

- A 2010 meta-analysis of 17 clinical trials concluded that massage therapy may help to reduce depression.
- Brief, twice-weekly yoga and massage sessions for 12 weeks were associated with a decrease in depression, anxiety, and back and leg pain in pregnant women with depression, a 2012 NCCIH-funded clinical trial showed. Also, the women's babies weighed more than babies born to women who didn't receive the therapy.
- However, a 2013 research review concluded that there's not enough evidence to determine if massage helps pregnant mothers with depression.
- A 2010 review concluded that massage may help older people relax.
- For generalized anxiety disorder, massage therapy was no better at reducing symptoms than providing a relaxing environment and deep breathing lessons, according to a small, 2010 NCCIH-supported clinical trial.

Fibromyalgia. A 2010 review concluded that massage therapy may help temporarily reduce pain, fatigue, and other symptoms associated with fibromyalgia, but the evidence is not definitive. The authors noted that it's important that the massage therapist not cause pain.

Headaches. Clinical trials on the effects of massage for headaches are preliminary and only somewhat promising.

HIV/AIDS. Massage therapy may help improve the quality of life for people with HIV or AIDS, a 2010 review of four small clinical trials concluded.

Infant care. Massaging preterm infants using moderate pressure may improve weight gain, a 2010 review suggested. There is insufficient evidence to know if massage benefits healthy infants who are developing normally, a 2013 review determined.

Other Conditions

Researchers have studied massage for the following but it's still unclear if it helps:

- Behavior of children with autism or autism spectrum disorders
- Immune function in women with breast cancer
- Anxiety and pain in patients following heart surgery
- Quality of life and glucose levels in people with diabetes
- Lung function in children with asthma.

Since massage is a core therapeutic offering in most spa and wellness centres, familiarity with the evidence as the basis for making claims is of the utmost importance.

AROMA

Gerard Bodeker

For the sense of smell, almost more than any other, has the power to recall memories and it is a pity that we use it so little.
Rachel Carson

Our ability to smell comes from specialized sensory cells, called olfactory sensory neurons, which are found in a small patch of tissue high inside the nose. These cells connect directly to the brain.

Each olfactory neuron has one odor receptor. Microscopic molecules released by substances around us—whether it's coffee brewing or pine trees in a forest—stimulate these receptors. Once the neurons detect the molecules, they send messages to the brain, which identifies the smell. There are more smells in the environment than there are receptors, and any given molecule may stimulate a combination of receptors, creating a unique representation in the brain.

Smell loss occurs with both Parkinson's disease and Alzheimers, and studies have indicated that a diminishing sense of smell can be an early sign of the onset of both conditions, occurring several years before motor skill problems develop[63].

Ancient traditions of medicine use aroma as part of healing, and aromatherapy – both as inhalation of essential oils and the use of these in massage – has become widespread in the wellness movement.

Aromatherapy uses essential oils – i.e. concentrated extracts taken from the roots, leaves, seeds, or blossoms of plants. Each contains its own mix of active ingredients, and this mix determines what the oil is used for. Some oils are used to promote physical healing -- for example, to treat swelling or fungal infections. Others are used for their emotional value -- they may enhance relaxation or make a room smell pleasant. Orange blossom oil, for example, contains a large amount of an active ingredient that is thought to be calming.

The University of Maryland's Center for Integrative Medicine, reports evidence suggesting that citrus oils may strengthen the immune system and that peppermint oil may help with digestion. Fennel, aniseed, sage, and clary sage have oestrogen like compounds, which may help relieve symptoms of premenstrual syndrome and menopause.

The US National Association for Holistic Aromatherapy references a range of studies showing, among other effects, the stress-reducing properties of sage oil, immune-modifying effects of eucalyptus oil, the role of peppermint oil in counteracting neuralgia, and the combination of peppermint oil and caraway oil in enhancing the quality of life of people suffering from dyspepsia:
https://naha.org/explore-aromatherapy/research

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[63] Doty RL. 2017. Olfactory dysfunction in neurodegenerative diseases: is there a common pathological substrate? Lancet Neurol. 16(6):478-488. doi: 10.1016/S1474-4422(17)30123-0.

Wellness pioneers such as Geraldine Howard in Britain and others who have taken aroma therapy to the heart of the wellness experience have transformed a small trend among health enthusiasts into a globally accepted wellness practice. Geraldine, who founded her company in 1985, attracted high-profile clients including Diana, Princess of Wales, and oversaw the growth of the company to become one of the UK's biggest beauty exports, now present in over 50 countries: http://www.vogue.co.uk/article/remembering-geraldine-howard-aromatherapy-associates

Technology is keeping apace of this growth in aromatherapy. One such innovation is Cyrano, described as a "Digital Scent Speaker and Mood Modification Platform." Cyrano is a small device that connects to a smartphone and releases a "symphony" of distinct smells from one place. Users can match the scent to whatever their mood is with a few presses of a button.

The increasing availability of essential oil-based products and technologies makes self-managed aromatherapy a very available, home-based and hence democratized dimension of the wellness industry, which is often perceived as out of reach for the majority.

LAUGHTER

Gerard Bodeker

Have you heard the one about the Laughter University..? Seriously..? …. Hilariously. It's called the Laughter Online University.

Here's their mission:

"The Laughter Wellness method is a new wellness modality that intentionally puts the energy of laughter into motion to create and sustain positive energies for the body, mind and spirit. Laughter Wellness shows how to safely and reliably promote health through laughter, joy and human connections, while at the same time developing a more resilient, positive attitude in life. It is a fully codified and substantiated approach to Laughter Therapy that is easy to implement."
http://www.laughteronlineuniversity.com/

And, while on the topic of laughter, there's even Laughter Yoga:
"Laughter yoga (*Hasyayoga*) is a practice involving prolonged voluntary laughter. Laughter yoga is based on the belief that voluntary laughter provides the same physiological and psychological benefits as spontaneous laughter. Laughter yoga is done in groups, with eye contact, jokes and playfulness between participants. Forced laughter soon turns into real and contagious laughter. In the mid-1990s, laughter yoga was practiced in the early mornings in open parks, primarily by groups of older people. Laughter yoga was made popular as an exercise routine developed by Indian physician Madan Kataria, who writes about the practice in his 2002 book *Laugh For No Reason*": https://en.wikipedia.org/wiki/Laughter_yoga

Some small-scale scientific studies indicate that Laughter Yoga may potentially have some medically beneficial effects on cardiovascular health and mood [64] [65].

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[64] Dolgoff-Kaspar, R; Baldwin, A; Johnson, MS; Edling, N; Sethi, GK. 2013. "Effect of laughter yoga on mood and heart rate variability in patients awaiting organ transplantation: a pilot study". Altern Ther Health Med. 18: 61–6. PMID 22894892.

[65] Shahidi, M; Mojtahed, A; Modabbernia, A; Mojtahed, M; Shafiabady, A; Delavar, A; Honari, H. 2011. Laughter yoga versus group exercise program in elderly depressed

As it turns out, social laughter, as it is termed, seems to release endorphins associated with feelings of wellbeing and heightened mood. Oxford University researchers conducted a series of experiments and found that pain thresholds - an indicator for endorphin release - were significantly higher after laughter. The researchers suggest that "laughter, through an endorphin-mediated opiate effect, may play a crucial role in social bonding"[66] .

In subsequent research they found that social laughter "increased pleasurable sensations and triggered endogenous opioid release in thalamus, caudate nucleus, and anterior insula. In addition, baseline MOR availability in the cingulate and orbitofrontal cortices was associated with the rate of social laughter"[67].

One research team paired laughter with physical exercise, noting that: "despite the health benefits of physical activity and the risks of physical inactivity, many adults don't engage in sufficient physical activity to achieve health benefits. Maintaining the motivation to adhere to regular physical activity is a challenge for many older adults".[68]

The study found significant improvements among participants in mental health, aerobic endurance and perceived benefit of exercise participation. When surveyed about their satisfaction with the program, 96.2 percent found laughter to be an enjoyable addition to a traditional exercise program, 88.9 percent said laughter helped make exercise more accessible and 88.9 percent reported the program enhanced their motivation to participate in other exercise classes or activities.

The researchers consider that simulated laughter may be an ideal way for older adults with functional or cognitive impairment to achieve the health benefits of laughter, which include improved physiological and psychological functioning. Participants simply choose to laugh and initiate laughter as bodily exercise. There is no need to rely on cognitive skills to "get the joke" … because there is no joke…

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women: a randomized controlled trial. Int J Geriatr Psychiatry. 26: 322–7. doi:10.1002/gps.2545. PMID 20848578.

[66] Dunbar RI, Baron R, Frangou A, Pearce E, van Leeuwen EJ, Stow J, Partridge G, MacDonald I, Barra V, van Vugt M. 2012. Social laughter is correlated with an elevated pain threshold. Proc Biol Sci. 279(1731):1161-7. doi: 10.1098/rspb.2011.1373.

[67] Manninen S, Tuominen L, Dunbar RI, Karjalainen T, Hirvonen J, Arponen E, Hari R, Jääskeläinen IP, Sams M, Nummenmaa L. 2017. Social Laughter Triggers Endogenous Opioid Release in Humans. J Neurosci. 37(25):6125-6131. doi: 10.1523/JNEUROSCI.0688-16.2017.

[68] Celeste M. Greene, Jennifer Craft Morgan, LaVona S. Traywick, Chivon A. Mingo. 2016. Evaluation of a Laughter-based Exercise Program on Health and Self-efficacy for Exercise. *The Gerontologist*; gnw105 DOI: 10.1093/geront/gnw105

THE ENVIRONMENT

Gerard Bodeker

THE SUN

While cycles of the moon can influence sleep patterns, it turns out that our brains and bodies are even more closely connected to the solar system than we imagine.

The 2017 Nobel Prize in medicine was awarded on October 1st to three scientists "for their discoveries of molecular mechanisms controlling the circadian rhythm", or the biological clock. Jeffrey C Hall, Michael Rosbash and Michael W Young were together given their award for understanding the mysteries of how life tracks time and changes itself according to the movement of the sun. The researchers discovered that all types of life on Earth – from plants to humans – regulate their body clock using the sun, with special technologies inside the body[69].

The sun is our major source of vitamin D yet, it is argued, that among the reasons vitamin D deficiency is so widespread are the public health messages from the U.S. Surgeon General, the Institute of Medicine, and the World Health Organization, all of whom promote avoidance of sun exposure and covering the skin with clothing or sunscreen when out in the sun.

The US Burden of Disease Project's findings reveal that of the 30 leading causes of death in the United States in 2010, 19 were linked to low vitamin D status, including various forms of cardiovascular disease, various cancers, diabetes mellitus, Alzheimer's disease, and falls and fractures in the elderly[70]

A Scientific Consensus Paper published in 2015 drew attention to the fact that UV exposure not only provides the benefits of vitamin D production, but also many additional health benefits not related to vitamin D. The authors state: "the current culture of sun avoidance in the United States carries with it both health risks and quantifiable harm". The scientific consensus paper notes that further study is needed to better understand the additional health benefits of UV light beyond vitamin D. These include those related to the release of nitric oxide, production of beta-endorphin, and regulation of circadian rhythms – all important components of life-long health and well-being, including mental well-being[71].

Subsequent research surveying 16,000 U.S. students assessed nineteen different environmental factors, including solar irradiance (the amount of sunlight reaching the Earth), cloud cover, rain, wind chill, barometric pressure and smog levels for their effect on mental stress. Seasonal changes in sun time were found to best account for relationships between weather variables and variability in mental health distress. Of all the environmental factors studies it was the seasonal changes in sun time that was most associated with mental health. Increased mental health distress was found during periods of reduced sun time hours. The authors concluded that their findings suggest

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[69] https://www.nobelprize.org/nobel_prizes/medicine/laureates/2017/

[70] US Burden of Disease Collaborators: The state of US health. 1990–2010: burden of diseases, injuries, and risk factors. JAMA 310:591–608, 2013.

[71] Carole A. Baggerly , BA, Raphael E. Cuomo , MPH, Christine B. French , MS, Cedric F. Garland , DrPH, FACE, Edward D. Gorham , PhD, William B. Grant , PhD, et al. Sunlight and Vitamin D: Necessary for Public Health. 2015. Journal of the American College of Nutrition Volume 34, 4.

"the need for institutions and public health entities to plan for intervention and prevention resources and strategies during periods of reduced sun time (p.234)" [72].

LIGHT

As we have seen, light affects sleep. It also affects mood and wellbeing. And the neurological and neurochemical basis for this is increasingly well understood. Research has noted that since the adoption of electric light, pervasive exposure to night time lighting has blurred the boundaries of day and night, making it more difficult to synchronize biological processes. Research reviewed in a recent paper by TA Bedrosian and RJ Nelson reports that many systems are under circadian control, including sleep–wake behavior, hormone secretion, cellular function and gene expression. Circadian disruption by night time light perturbs those processes and is associated with increasing incidence of certain cancers, metabolic dysfunction and mood disorders[73]. It has been found that circadian disruption alters the function of brain regions involved in emotion and mood regulation.

New technologies offer a range of promising solutions:

- Smart' homes and 'smart' lighting fixtures use precise LEDs to adjust the wavelength of light depending on the time of day.
- Apps for smartphones, tablets and computers are available to automatically redshift the colour of the screen in the evening to a wavelength less likely to activate ipRGCs.
- New street light designs are being introduced to focus the light toward the street and avoid upward light leakage.
- And heavy black out curtains impermeable to light are being adopted for bedroom use.

But shift workers and hospital inpatients exposed to a 24/7 lighted environment, for example, need special consideration. There has been a call for future research to determine the minimum light intensity and spectral characteristics required to elicit depressed mood in humans and then seek solutions to optimize indoor and outdoor lighting to minimize human circadian disruption.

As the world's population expands, and developing countries modernize, light pollution will grow to affect even more people. The list of biological systems affected by light at night is long. And, as noted, additional research is needed to tease out the critical systems and determine strategies to protect them from disruption by night time light.

At the same time, light is used as means of treating mood disorders associated with reduced light in the environment, particularly during long northern winters. Light therapy is a way to treat seasonal affective disorder (SAD) and certain other

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[72] Mark E. Beecher, Dennis Eggett, Davey Erekson, Lawrence B. Rees, Jennie Bingham, Jared Klundt, Russell J. Bailey, Clark Ripplinger, Jessica Kirchhoefer, Robert Gibson, Derek Griner, Jonathan C. Cox, R.D. Boardman. Sunshine on my shoulders: Weather, pollution, and emotional distress. Journal of Affective Disorders. Volume 205, Pages 234-238 (15 November 2016)

[73] T A Bedrosian and R J Nelson. 2017. Timing of light exposure affects mood and brain circuits. Transl Psychiatry. 7(1): e1017. Published online 2017 Jan 31. doi: 10.1038/tp.2016.262.

conditions by exposure to artificial light. SAD is a type of depression that occurs at a certain time each year, usually in the fall or winter.

The Mayo Clinic website describes the process of light therapy: "During light therapy, a person sits or works near a device called a light therapy box. The box gives off bright light that mimics natural outdoor light. Light therapy is thought to affect brain chemicals linked to mood and sleep, easing SAD symptoms. Using a light therapy box may also help with other types of depression, sleep disorders and other conditions. Light therapy is also known as bright light therapy or phototherapy." https://www.mayoclinic.org/tests-procedures/light-therapy/about/pac-20384604

A Canadian randomized clinical trial examined the effects of light therapy on depressive conditions that were no linked to seasonal changes. They compared a group with light therapy, a group with anti-depressant therapy, and a group with both of these combined. The authors report that: "Bright light treatment, both as monotherapy and in combination with fluoxetine, was efficacious and well tolerated in the treatment of adults with non-seasonal Major Depressive Disorder (MDD). The combination treatment had the most consistent effects"[74].

The term 'daylighting' has become well established in 21st century architecture and refers to designing buildings to use light from the sun to support human health and activities and to reduce energy demand. Current research suggests health, productivity, and economic benefits from daylighting. Good daylighting techniques include configuring buildings properly, elongating buildings along an east–west axis, locating critical visual tasks near the building's perimeter, bringing the light in high, admitting daylight from more than one side of a space, controlling direct sunlight, using light-coloured interior surfaces, and locating workstations and computer screens perpendicular to windows[75].

New thinking is moving away from conventional daylighting systems that mainly focus on controlling the incoming solar beam radiation, thus regulating the illuminance levels, usually near perimeter zones. In 2017, a sunlight redirection system was developed – one that uses a number of movable mirrors, installed on a light shelf and capable of tracking the sun. The results indicate an increase of 99%, in the daylighting levels in the secondary (non-daylit) area during the summer solstice and a reduction of 21%, during the winter solstice, when compared to an unshaded, unobstructed reference case[76].

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[74] Raymond W. Lam, MD; Anthony J. Levitt, MBBS; Robert D. Levitan, MD, MSc; et al. 2016. Efficacy of Bright Light Treatment, Fluoxetine, and the Combination in Patients With Nonseasonal Major Depressive Disorder A Randomized Clinical Trial. JAMA Psychiatry. 2016;73(1):56-63. doi:10.1001/jamapsychiatry.2015.2235

[75] R.P.Leslie. 2003. Capturing the daylight dividend in buildings: why and how? Building and Environment 38, 2, 381-385.

[76] Antonis Kontadakis, Aris Tsangrassoulis, L.Doulos, F.Topalis. 2017. An active sunlight redirection system for daylight enhancement beyond the perimeter zone. Building and Environment.113, 267-279.

Now, The Lighting Research Center in New York is researching, within an architectural context, how light can be used to promote health and wellbeing: http://lightingpatternsforhealthybuildings.org/

Clearly, the wellness sector has much to gain and much to learn. Light is of fundamental importance to our biology – chronobiology – and to the related moods and sense of wellbeing that its presence or absence can bring. Health-promoting lighting will become a core feature of wellness architecture in the future, as will a range of light-optimising technologies and pathways to natural immersion in light in Nature.

BEING IN NATURE

The influential American zoologist Edward Wilson coined the concept of *biophilia*: "The connection that human beings subconsciously seek and need with the rest of life[77]."

A British Medical Journal article in 2005 built on this concept, as well as that of Gregory Bateson's theoretical framework for improving health through conserving nature to state: "The therapeutic implication of *biophilia* is ecotherapy: restoring health through contact with nature"[78].

The British mental health charity, MIND, has published a booklet on Ecotherapy which it describes as "the name given to a wide range of treatment programmes which aim to improve your mental and physical wellbeing through doing outdoor activities in nature"[79]. A number of books have now been published on this topic[80].

Considering the benefits of ecotherapy from a public policy perspective, it has been noted that "people seeking personal recovery may, through stewardship of green spaces, achieve unanticipated social capital and natural capital outcomes"[81]. At the same time, there are calls for more robust evidence to support the claims of ecotherapy.

Being in Nature as a means of restoring mental wellbeing is not new, nor is it exclusively Western.

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[77] Wilson EO. *Biophilia.* Cambridge, MA: Harvard University Press, 1984.

[78] Burls A, Caan W. Human health and nature conservation. *BMJ* 2005; 331 doi: https://doi.org/10.1136/bmj.331.7527.1221 (Published 24 November 2005)

[79] https://www.mind.org.uk/media/2699029/making-sense-of-ecotherapy-2015.pdf

[80] 'Ecotherapy: Healing with Nature in Mind' by Linda Buzzell, Craig Chalquist. Sierra Club Books
San Francisco, 2009.
'Ecotherapy: Healing Ourselves, Healing the Earth', by Howard Clinebell. The Haworth Press,
New York, 2013.

[81] Ambra Burls. People and green spaces: promoting public health and mental well-being through ecotherapy. 2007. Journal of Public Mental Health. Vol 6, 3, pp.24-39, https://doi.org/10.1108/17465729200700018

The master of Chinese Medicine, Sun Simiao, advised that fresh air, daily walks in natural landscapes and food from a fresh and wholesome garden – cultivated in part by the owner – were the fundamentals of creating and maintaining good health. Sun Simiao was born around 581 CE and died in 682 CE after completing his 30 volume Encyclopedia of Medicine – the first few volumes of which were not dedicated to medicine at all, but to lifestyle, diet and exercise. The Chinese poet and scholar Tao Yuanming, later known as Tao Qian (365- 427), resigned his post as a civil administrator and chose a life of poetry, farming, family, friendships, wine and, above all, a connection with the deep pulse of life – known in Chinese tradition as the Tao. Both Sun Simiao and Tao Qian have become Chinese icons of an ideal life in Nature.

And the ancient Indian tradition of going to the Himalayas for cold water bathing and doing morning exercises with the rising sun also have their roots in the healing power of Nature and in humans balancing their lives by connecting with Nature.

In Japan tradition, there is the tradition of *Shinrin-yoku*, a term that means "taking in the forest atmosphere" or "forest bathing."

The group Shinrin-Yoku.org lists research findings on Shinrin-yoku as:

- Boosted immune system functioning, with an increase in the count of the body's Natural Killer (NK) cells.
- Reduced blood pressure
- Reduced stress
- Improved mood
- Increased ability to focus, even in children with ADHD
- Accelerated recovery from surgery or illness
- Increased energy level
- Improved sleep[82]

While no references are provided for this, there is a body of evidence emerging that does support these types of claims.

A Green Paper from the Wildlife Trusts of the UK and the Royal Society for the Protection of Birds has called for Parliament to enact a Wildlife and Wellbeing Act[83]. In support of this, they cite a body of research showing that access to Nature is associated with better physical and mental health.

For instance, accessible green space is good for psychological wellbeing, improving recovery from stress and protecting against future stress, and improving concentration[84]. And it turns out that the quality of green space,

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[82] http://www.shinrin-yoku.org/shinrin-yoku.html

[83] https://www.wildlifetrusts.org/sites/default/files/green_paper_nature_and_wellbeing_act_full_final.pdf

[84] Maller, C., Townsend, M., Brown, P. and St Leger, L. (2002) Healthy parks healthy people: The health benefits of contact with nature in a park context. Melbourne: Deakin University and Parks Victoria; Nisbet, E.K. and Zelenski, J.M. (2011). Underestimating nearby nature: Affective forecasting errors obscure the happy path to sustainability. Psychological Science 22: 1101–1106; Tanako, T., Nakamura, K. and Watanabar, M. (2002) Urban residential environments and senior citizens longevity in megacity areas: the importance of walkable green spaces. Journal of Epidemiology and Community Health 56: 913–918.

including its richness in wildlife, may be more important to mental health benefits than its quantity[85]. People living near quality green space, full of wildlife and thriving habitats, were twice as likely to report low psychological distress as those living near low quality open spaces.

Might this have benefits for local environmental conservation as well as personal wellbeing? This question was asked in a British review of the evidence.
Noting that outdoor environmental enhancement and conservation activities (EECA) (for instance unpaid litter picking, tree planting or path maintenance) offer opportunities for physical activity alongside greater connectedness with local environments, enhanced social connections within communities and improved self-esteem through activities that improve the locality which may, the study aimed to assess whether this also improved personal well-being.

Interventions included each of the following:

- intended to improve the outdoor natural or built environment at either a local or wider level;
- took place in urban or rural locations in any country
- involved active participation
- were NOT experienced through paid employment

Noting difficulty in quantitatively assessing the effects of the wellbeing effects of engagement in environmental enhancement activities, this Cochrane Collaborative review found that qualitative research showed high levels of perceived benefit among participants, where people believe they do achieve health and well-being benefits, including opportunities for social contact[86].

People tend to live longer when they have access to green space and perceived neighbourhood greenness is strongly associated with better mental and physical health [87]. Those living in highly green areas are much more likely to have better physical and mental health than those living near open areas that are not highly green[88].

Nature near home is particularly important for children, increasing their ability to cope with stressful life events, directed attention and cognitive function[89].

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[85] Francis, J., Wood, L.J., Knuiman, M. and Giles-Corti, B. (2012) Quality or quantity? Exploring the relationship between Public Open Space attributes and mental health in Perth, Western Australia. Social Science and Medicine 74: 1570–1577.

[86] Husk K, Lovell R, Cooper C, Stahl-Timmins W, Garside R. Participation in environmental enhancement and conservation activities for health and well-being in adults: a review of quantitative and qualitative evidence. Cochrane Database Syst Rev. 2016 May 21;(5):CD010351. doi: 10.1002/14651858.CD010351.pub2.

[87] Tanako, T., Nakamura, K. and Watanabar, M. (2002) Urban residential environments and senior citizens longevity in megacity areas: the importance of walkable green spaces. Journal of Epidemiology and Community Health 56: 913–918.

[88] Sugiyama, T., Leslie, E., Giles-Corti, B. and Owen, N. (2008) Associations of neighbourhood greenness with physical and mental health: Do walking, social coherence and local social interaction explain the relationships? Journal of Epidemiology and Community Health 62: e9.

[89] Wells, N.M. (2000) At home with nature: effects of "greenness" on children's cognitive functioning. Environment and Behaviour 32: 775–795; Wells, N.M. and Evans,

And exposure and connectedness to nature have been found to be associated with body appreciation and self-esteem in women and men[90]. A study at Kings College London used a novel smartphone-based tool to monitor the impact of nature on momentary mental wellbeing in natural environment. The team found that:

- being outdoors, seeing trees, hearing birds singing, seeing the sky, and feeling in contact with nature were associated with higher levels of momentary mental well-being;
- these beneficial effects could still be observed even if the participant was no longer outdoors and no longer had access to nature.
- the effects were greater in people with higher levels of impulsivity. Noting the associations between impulsivity and addictive disorders, attention-deficit hyperactivity disorder, antisocial personality disorder, and bipolar disorder, the researchers point out that the beneficial effects of nature may be especially evident in those individuals who possess greater vulnerability to mental-health issues[91].

There is now a Journal of the International Community for Ecopsychology which reports on trends and findings from the field of Nature Therapy.

Another organization, Hope in Bloom, is a non-profit group which plants gardens for breast cancer sufferers. They note: "Healing gardens have been proven to be therapeutic sanctuaries offering both comfort and hope to meet the emotional and psychological needs of patients and their families. Many of our recipients are now in remission and attribute their good fortune in part to their gardens. Others report their gardens help reduce stress and anxiety, which strengthens their resolve to face an often-grueling treatment regimen" (www.hopeinbloom.org).

While most of the focus of this body of research is on experience of forests and garden settings, there is also evidence demonstrating the therapeutic benefits off coastal landscapes[92].

The restorative power of humans finding their place back in the context of Nature, where we evolved for most of our history, does seem to be gaining ground as an important component of wellness, and especially mental wellness, pathways.

G.W. (2003) Nearby Nature: A buffer of life stress among rural children. Environment and Behaviour 35: 311–330.

[90] Viren Swami, David Barron, Laura Weis, Adrian Furnham. Bodies in nature: Associations between exposure to nature, connectedness to nature, and body image in U.S. adults. Body Image Volume 18, September 2016, Pages 153-161

[91] Ioannis Bakolis Ryan Hammoud Michael Smythe Johanna Gibbons Neil Davidson Stefania Tognin Andrea Mechelli . Urban Mind: Using Smartphone Technologies to Investigate the Impact of Nature on Mental Well-Being in Real Time. BioScience, Volume 68, Issue 2, 1 February 2018, Pages 134–145, https://doi.org/10.1093/biosci/bix149

[92] Sarah L. Bell, Cassandra Phoenix, Rebecca Lovell Benedict W. Wheeler. Seeking everyday wellbeing: The coast as a therapeutic landscape. Social Science & Medicine Volume 142, October 2015, Pages 56-67.

POLLUTION

Research from China, where 16 of the most polluted cities are listed in the UN's Top 20 most polluted cities in the world, has found that bad air quality contributes to poor mental health and unhappiness. The study looked at the impact of air pollution on several key dimensions, including mental health status, depressive symptoms, moment-to-moment happiness, and evaluative happiness (i.e. overall life satisfaction). What they found was that air pollution reduces all forms of happiness and increases the rate of depressive symptoms over time[93].

Data from over 70,000 women in the US Nurses' Health Study revealed that exposure to fine particulate matter was associated with high symptoms of anxiety. The Johns Hopkins team that carried out the research proposed that this may be because exposure to particulate matter air pollution induces or exacerbates anxiety through increased oxidative stress and systemic inflammation. It could also be through promotion or aggravation of chronic disease[94].

A Swedish study investigated the mental health effects of air pollution on more than half a million children and adolescents. Using a national registry of medication, they found evidence for a link between exposure to air pollution and dispensed medications for certain psychiatric disorders in children and adolescents[95].

A number of other studies replicate and expand these findings. What is clear from the perspective of mental wellness is that living with access to green space and nature enhances our mental wellbeing and that exposure to air pollution worsens it.

Clearly, air quality should be a key feature of wellness programs for urban dwellers and for offerings at urban wellness destinations, as should access to nature.

CLIMATE CHANGE – EFFECT ON MENTAL HEALTH

People who worry about the Earth's animals and plants are more likely than others to experience stress — and even depression — related to climate change.

University of Arizona researchers studied how people's perception of the threat of global climate change affects their mental health. They found that while some people have little anxiety about the Earth's changing climate, others are experiencing high

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[93] Xin Zhang, Xiaobo Zhang, Xi Chen. Happiness in the air: How does a dirty sky affect mental health and subjective well-being? Journal of Environmental Economics and Management Volume 85, September 2017, Pages 81-94.

[94] Power MC, Kioumourtzoglou MA, Hart JE, Okereke OI, Laden F, Weisskopf MG. The relation between past exposure to fine particulate air pollution and prevalent anxiety: observational cohort study. BMJ. 2015 Mar 24;350:h1111. doi: 10.1136/bmj.h1111.

[95] Anna Oudin, Lennart Bråbäck, Daniel Oudin Åström, Magnus Strömgren, Bertil Forsberg. Association between neighbourhood air pollution concentrations and dispensed medication for psychiatric disorders in a large longitudinal cohort of Swedish children and adolescents. BMJ Open. 2016. Vol 6, 6.

levels of stress, and even depression, based on their perception of the threat of global climate change. Specifically, psychological responses to climate change seem to vary based on what type of concern people show for the environment, with those highly concerned about the planet's animals and plants experiencing the most stress. By contrast, people higher in egoistic concern did not seem to perceive climate change threats as having a profound effect on their own or their family's life – despite the reality that it will. The researchers emphasize that the impact of climate change on individuals seems to be growing slowly and needs to be taken very seriously[96].

[96] Sabrina V. Helma, Amanda Pollitt, Melissa A. Barnett, Melissa A. Curran, Zelieann R. Craig. 2018. Differentiating environmental concern in the context of psychological adaption to climate change. Global Environmental Change, 48 158–167.

MOVEMENT

Gerard Bodeker

EXERCISE AND MENTAL WELLNESS

In addition to the well-documented effects of exercise on quality of life and longevity[97], there is an emerging body of findings showing that exercise benefits mental wellbeing.

In a study published in the Journal of Clinical Psychiatry, researchers at the University of Texas Southwestern Medical College studied exercise as a secondary treatment for patients with major depressive disorder who had not achieved remission through drugs alone. The researchers evaluated two exercise doses: One group of patients burned four kilocalories per kilogram each week, while another burned 16 kilocalories per kilogram weekly. They found both exercise protocols led to significant improvements, though the higher-dose exercise program was more effective for most patients[98].

In subsequent research funded by the National Institute of Mental Health, the same research team looked at affective response to an initial exercise session as a predictor of the effectiveness of treatment for depressed patients. Noting that predicting treatment response very early in the course of treatment can avoid unnecessarily lengthy trials with ineffective treatments, the researchers looked at the same high and low dose exercise regimens. They found that response to the very first high dose exercise session was a reliable predictor of treatment outcome for depression. However, this wasn't the case for low dose exercise. Knowledge of initial response to high dose exercise has clinical utility to predict treatment response to exercise in depression and enable clinicians to match the "right patient" with the "right" treatment[99].

The growing body of research findings on exercise and mood are now being translated into 'how to' approaches. For example, in the Oxford University Press book "Exercise for Mood and Anxiety", authors Michael Otto PhD and Jasper Smits PhD translate scientific findings and principles of behaviour change into accessible strategies for the general public. The focus is on helping to establish and maintain an exercise program by understanding the relationship between mood and motivation.

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[97] Scott A Lear et al. The effect of physical activity on mortality and cardiovascular disease in 130 000 people from 17 high-income, middle-income, and low-income countries: the PURE study. Lancet. 21 September, 2017. DOI: http://dx.doi.org/10.1016/S0140-6736(17)31634-3

[98] Trivedi MH1, Greer TL, Church TS, Carmody TJ, Grannemann BD, Galper DI, Dunn AL, Earnest CP, Sunderajan P, Henley SS, Blair SN. Exercise as an augmentation treatment for nonremitted major depressive disorder: a randomized, parallel dose comparison. J Clin Psychiatry. 2011 May;72(5):677-84. doi: 10.4088/JCP.10m06743.

[99] Suterwala AM, Rethorst CD, Carmody TJ, Greer TL, Grannemann BD, Jha M, Trivedi MH. Affect Following First Exercise Session as a Predictor of Treatment Response in Depression. J Clin Psychiatry. 2016 Aug;77(8):1036-42. doi: 10.4088/JCP.15m10104.

The strategy includes worksheets and checklists to help record information on moods before and after a workout in order to improve motivation[100].

In deprived neighbourhoods, there are benefits to mental wellbeing from boosting physical activity among residents, especially those with particularly low general levels of mental wellbeing. A study of 3854 adults from 30 neighbourhoods in Glasgow, UK, found that adults who do more physical activity generally have better mental wellbeing[101].

At present, there is no scientific consensus on how exercise elevates mood. One theory is that exercise alleviates chronic depression by increasing serotonin (the neurotransmitter targeted by antidepressants) or brain-derived neurotrophic factor (which supports the growth of neurons).

Another theory suggests that exercise helps by normalizing sleep, which is known to have protective effects on the brain. Psychological explanations include the possibility that exercise may boost a depressed person's outlook by helping them return to meaningful activity, providing a sense of accomplishment.

Whatever the reason, exercise is a major platform of wellness policy around the world and the public in industrialised societies is engaging more with exercise. The US Centers for Disease Control reported that the annual percentage of adults aged 18 and over who met the 2008 federal physical activity guidelines for aerobic activity (based on leisure-time activity) was stable from 1997 through 2006 in the 40%-43% range, then steadily increased to 51.7% in 2016. However, as age increased, the percentage of adults who met federal physical activity guidelines for aerobic activity decreased[102].

There are cautions that need to be noted as well. For example, according to data collected by the U.S. Consumer Product Safety Commission (CPSC), almost 460,000 people were sent to hospital in 2012 for injuries related to exercise equipment. The vast majority—nearly 428,000 - were treated and released for their injuries. But about 32,000 were hospitalized or were dead on arrival. Of the serious injuries involving exercise equipment, treadmills in particular, are among the most common seen in emergency rooms. In 2014, hospital emergency departments across the USA treated some 24,400 treadmill related injuries. Treadmill injuries included broken bones, abrasions, rectal bleeding and people developing chest pain while working out on the machines, according to a review of the CPSC data base system[103].

Another cautionary note comes from a study in London which compared the effects of walking for exercise in a busy street (Oxford Street) versus in a park (Hyde Park). Results showed that short-term exposure to traffic pollution prevents the beneficial cardiopulmonary effects of walking in people with heart disease, as well as in those

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[100] Otto M, Smits J. Exercise for Mood and Anxiety; Proven Strategies for Overcoming Depression and Enhancing Well-Being. Oxford University Press, 2011. ISBN: 9780199791002

[101] Phil Mason, Ade Kearns. Physical activity and mental wellbeing in deprived neighbourhoods. Mental Health and Physical Activity, Volume 6, Issue 2, June 2013, Pages 111-117.

[102] CDC: https://www.cdc.gov/nchs/data/nhis/earlyrelease/earlyrelease201705.pdf, Figures 7.1 and 7.2.

[103] https://www.usatoday.com/story/news/2015/05/04/treadmill-emergency-room-injuries-exercise-equipment/26898487/

who were free from chronic cardiopulmonary diseases. Walking in a busy street led to "exposure to NO_2, ultrafine particles and $PM_{2.5}$, and an increase in PWV and augmentation index with NO_2 and ultrafine particles. In healthy volunteers, PWV and augmentation index were associated both with black carbon and ultrafine particles"[104]. The authors conclude that exercise such as walking should be done in urban green space areas away from high density traffic or in indoor facilities with effective air filtration if located near polluted streets.

An important new body of research is examining the possibility that benefits from exercise can be inherited. Noting that epigenetics is the study of gene expression changes that occur in the absence of altered genotype, a 2017 review presents experimental evidence indicating that environmentally-induced alterations to epigenetic modifications lead to changes in health and disease across generations[105].

Noting the need for new research to establish the link between exercise and epigenetic inheritance for human health and disease prevention, the author of this review, Joshua Denham of the University of New England in Australia, argues that "Such studies could establish an extraordinary role for maternal and paternal exercise training to promote exercise induced adaptations and encourage the prevention age related chronic disease in future generations" (p.18).

Looking ahead, if the benefit of exercise can be established to confer benefits to successive generations, surely there is a need for research on the many other wellness modalities referenced here and elsewhere to determine if these also benefit not only the practitioner, but their descendants as well. This would be a research agenda designed to support the need for this generation to take action not only for its own health and wellbeing but, through this, for the improvement of society's health and wellbeing in the future.

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[104] Rudy Sinharay, Jicheng Gong, Benjamin Barratt, Pamela Ohman-Strickland, Sabine Ernst, Prof Frank J Kelly, Prof Junfeng (Jim) Zhang, Prof Peter Collins, Prof Paul Cullinan, MD, Prof Kian Fan Chung. Respiratory and cardiovascular responses to walking down a traffic-polluted road compared with walking in a traffic-free area in participants aged 60 years and older with chronic lung or heart disease and age-matched healthy controls: a randomised, crossover study. Lancet. Volume 391, No. 10118, p339–349, 27 January 2018.

[105] J. Denham. Exercise and epigenetic inheritance of disease risk. Acta Physiol (Oxf). 2017 Mar 30. DOI:10.1111/apha.12881

YOGA

The US National Institutes of Health's Center for Complementary and Integrative Health states: "Recent studies in people with chronic low-back pain suggest that a carefully adapted set of yoga poses may help reduce pain and improve function (the ability to walk and move). Studies also suggest that practicing yoga (as well as other forms of regular exercise) might have other health benefits such as reducing heart rate and blood pressure, and may also help relieve anxiety and depression"[106].

Renowned researcher, Professor Tiffany Field, director of the Touch Research Institute at the University of Miami 's has published a review and a book on clinical research on yoga[107] [108]. The following is a summary of her findings[109].

Psychological Effects. Field notes that at least two studies have demonstrated significant increase in mindfulness, while several others have measured reduction in job stress in both office and fire station settings. Studies of yoga's effects on anxiety are common, with significant series and single session effects on measures of stress, anxiety, fatigue and depression, wellbeing and vigor. She then cites several studies in which measures of depression decreased after extended practice (~2 months). Field also reviewed sleep studies focused on yoga's effects on insomniac, pregnant, geriatric, and pain syndrome groups. In all studies, yoga was found to have increased sleep efficiency, total sleep time, number of awakenings, and sleep quality.

Pain Syndromes. For those suffering from pain syndromes, such as lower back pain, headaches, osteoarthritis, and rheumatoid arthritis, Field notes findings of significant pain reduction and less analgesic and opiate use in yoga than control groups, and that these findings held regardless of gender or age differences among participants.

Cardiovascular Conditions. Field describes several studies addressing coronary artery disease and hypertension. In each, yoga was found to significantly improve cholesterol and serum low-density lipid levels. Yoga groups also had fewer anginal episodes, improved exercise capacity, decreased body weight, and lowered triglyceride levels than control groups. Blood pressure and blood glucose were reduced, and self-reported wellbeing and quality of life were increased.

Immune Conditions. Field notes that for immune (and autoimmune) conditions such as asthma, diabetes, multiple sclerosis, lymphoma, and breast cancer, yoga has been associated with several beneficial effects. For example, in studies of diabetes, daily yoga decreased blood glucose levels, including fasting levels, glycosylated hemoglobin levels, heart rate, systolic and diastolic blood pressure, and oxidative stress markers. Increased energy and decreased stress were also observed among diabetic groups. Lymphoma and cancer patients, too, Field reports, benefited from many of the same effects already mentioned, including lower sleep disturbance scores, reduced anxiety, pain, and fatigue, and increased relaxation.

Pregnancy. Pregnancy-specific conditions, such as hypertension, preterm labor, and labor pain, as well as more general measures of stress and vagal activity in the context

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[106] NCCIH: https://nccih.nih.gov/health/yoga/introduction.htm

[107] Field T. Yoga clinical research review. *Complementary Therapies in Clinical Practice*. 2011;17(1):1–8.

[108] Tiffany Field, Yoga Research. 2012. Xlibris Corporation, United States (2012)

[109] https://leeware.wordpress.com/2012/03/08/summary-of-fields-yoga-clinical-research-review/

of pregnancy, have been studied in association with yoga. Field discusses several of these studies' findings. In one, complications such as pregnancy-induced hypertension, preterm labor, and prematurity were significantly less frequent in the yoga than control walking group. In another study, Field reports significant improvements in both subjects' perceived stress levels and their adaptive autonomic responses to stress following daily yoga throughout pregnancy. Overall labor duration, as well as labor pain, both during and following delivery, was found to be lower for yoga than control groups by another study.

Physiological Effects of Yoga Practice. Field reiterates the physiological effects documented across the studies reviewed, noting heart rate, blood pressure, EEG, pulmonary function, and oxygen consumption, as well as physical effects such as weight loss and increased balance and flexibility. Field goes on to cite studies focused on these physiological effects. For example, prolonged yoga training caused a decrease in exercise-induced heart rate in three mentioned studies, while another study found that baseline heart rate and lowest heart rate during a 6-minute exercise period were both significantly reduced in yoga versus walking groups. Vagus nerve activity, as measured by parameters associated with heart rate and heart rate variability, was significantly increased in yoga groups, as was oxygen consumption and breath volume. Contradictory evidence was found in another study mentioned by Field in which oxygen consumption was found to be lower following a yoga session than following rest alone. Yoga has also been found to reduce overall food consumption, eating speed, and food choices. Long-term yoga practice was also associated with lower weight gains, especially – notes Field – among overweight participants.

Potential Mechanisms of Action. Field proposes that yoga's positive effects may be due to increased vagus nerve activity and decreased cortisol levels. She cites studies that have found significant increases in vagal activity in yoga over control groups. Field speculates that pressure receptors stimulated during yoga activity may activate afferent fibers connected to the limbic system (specifically hypothalamic) structures involved in cortisol secretion. She cites anatomical studies connecting baro- and mechanoreceptors of the dermis to vagal afferent fibers, functional studies associating direct, artificial vagal stimulation with reduced cortisol levels, and finally, two studies connecting yoga to reduced cortisol levels. In many of the studies reviewed, mental wellbeing was enhanced by yoga practice, either directly or as a result of improvement in overall health and reduction of specific medical conditions.

TAI CHI

Tai Chi, also called Tai Chi Chuan, combines deep breathing and relaxation with flowing movements. Originally developed as a martial art in 13th-century China, Tai Chi is today practised around the world as a health-promoting exercise and a means of developing self-awareness[110].

As balance is the core goal of Tai Chi – balance while in motion – it is no surprise that Ta Chi has been used as a means of developing and maintaining balance among those at most risk of falling and incurring often life-damaging injuries – viz. the elderly. A meta-analysis of studies on the effects of Tai Chi in preventing falling in the elderly found that Tai Chi exercise is indeed effective for preventing falls in older adults. The preventive effect seems to increase with the frequency of Tai Chi practice. And, interestingly, the study found a difference in effect with different styles of Tai Chi.

[110] NHS Choices: http://www.nhs.uk/Livewell/fitness/Pages/taichi.aspx

Yang style Tai Chi (created in the 19th century and the most widespread form of Tai Chi today) seemed to be more effective than Sun style Tai Chi, the most recently created form of Tai Chi[111].

Veterans with post-traumatic stress symptoms took part in a four-session introduction to Tai Chi in Boston. In addition to reporting a high degree of satisfaction with the program, participants reported feeling very engaged during the sessions, and found Tai Chi to be helpful for managing distressing symptoms (i.e. intrusive thoughts, concentration difficulties, physiological arousal)[112].

In 2016, a map of 107 systematic reviews of Tai Chi was published. The map identified a number of areas with evidence of a potentially positive treatment effect on patient outcomes, including Tai Chi for hypertension, fall prevention outside of institutions, cognitive performance, osteoarthritis, depression, chronic obstructive pulmonary disease, pain, balance confidence, and muscle strength[113]. As with all systematic reviews, there was a call for further research to be done to fine tune these findings.

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[111] Zhi-Guan Huang, Yun-Hui Feng, Yu-He Li, Chang-Sheng Lv. Systematic review and meta-analysis: Tai Chi for preventing falls in older adults. BMJ Open, 2017. Vol 7, Issue 2.

[112] Feasibility, qualitative findings and satisfaction of a brief Tai Chi mind–body programme for veterans with post-traumatic stress symptoms. Barbara L Niles, DeAnna L Mori, Craig P Polizzi, Anica Pless Kaiser, Annie M Ledoux, Chenchen Wang. BMJ Open, 2016. Vol 6, Issue 11.

[113] Michele R. Solloway, Stephanie L. Taylor, Paul G. Shekelle, Isomi M. Miake-Lye, Jessica M. Beroes, Roberta M. Shanman and Susanne Hempel. An evidence map of the effect of Tai Chi on health outcomes. Systematic Reviews, 2016, **5**:126 https://doi.org/10.1186/s13643-016-0300-y

DANCE

A quarter of a century of research has underscored the benefits of dance and dance movement therapy (DMT) on generalized mental well-being[114] on brain development in adults and children[115] [116], on mood stabilization in adolescents[117] and in reducing depression and anxiety across the age-span[118] [119]. In short, dance has been shown to combine many different factors that contribute to improvement in the competence needed in everyday life[120].

Research across the age-span has highlighted the differing benefits of dance for different age groups. Children – especially girls – have been found to make significant physical advances as well as improvements in measures of psychological well-being through dance training[121]. Adults have been found to undergo structural brain changes associated with creativity and artistic expression[122].

Older-aged dance participants with Parkinson's Disease have shown improvements in mobility, reduced tremor and improved social outreach[123]. There is now an international program called *Dance for PD* that began in New York and has spread to many countries. It offers dance as a means of enhancing quality of life and improving symptoms in people with Parkinson's Disease[124].

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[114] Koch, S., Kunz, T., Lykou, S. and Cruz, R. (2014), 'Effects of dance movement therapy and dance on health-related psychological outcomes: A metaanalysis', The Arts in Psychotherapy,41:1,46-64

[115] Brown S. and Parsons, L. M. (2008), 'The neuroscience of dance', Scientific American, July 1, 299: 1, pp. 78–83.

[116] Karpati, F. J., Giacosa, C., Foster, N. E., Penhune, V. B. and Hyde, K. L. (2015), 'Dance and the brain: A review', Annals of the New York Academy of Sciences, 1337: 1, pp. 140–46.

[117] Anderson, A. N., Kennedy, H., DeWitt, P., Anderson, E. and Wamboldt, M. Z. (2014), 'Dance movement therapy impacts mood states of adolescents in a psychiatric hospital', Arts in Psychotherapy, 41: 3, pp. 257–62.

[118] Bräuninger, I. (2012), 'The efficacy of dance movement therapy group on improvement of quality of life: A randomized controlled trial', Arts in Psychotherapy, 39: 5, 443–450.

[119] Koch, S., Kunz, T., Lykou, S. and Cruz, R. (2014), 'Effects of dance movement therapy and dance on health-related psychological outcomes: A metaanalysis', The Arts in Psychotherapy, 41: 1, pp. 46–64.

[120] Ritter, M. and Lowe, K. G. (1996), 'The effectiveness of dance/movement therapy', The Arts in Psychotherapy, 23: 3, pp. 249–60.

[121] Jeong, Y. J., Hong, S. C., Lee, M. S., Park, M.C., Kim, Y. K. and Suh, C.M. (2005), 'Dance movement therapy improves emotional responses and modulates neurohormones in adolescents with mild depression', International Journal of Neuroscience, 115: 12, pp. 1711–20.

[122] Karpati, F. J., Giacosa, C., Foster, N. E., Penhune, V. B. and Hyde, K. L. (2015), 'Dance and the brain: A review', Annals of the New York Academy of Sciences, 1337: 1, pp. 140–46.

[123] Westheimer, O., McRae, C., Henchcliffe, C., Fesharaki, A., Sofya Glazman, S., Ene, H. and Bodis-Wollner, I. (2015), 'Dance for PD: A preliminary investigation of effects on motor function and quality of life among persons with Parkinson's disease (PD)', Journal of Neural Transmission, 122: 9, pp. 1263–70.

[124] Dance for PD: http://www.capturinggracefilm.com/about-dance-for-pd/; https://danceforparkinsons.org/; http://www.danceforparkinsonsuk.org/

A New England Journal of Medicine study examined physical and cognitive activities associated with reduced risk of developing Alzheimer's Disease (AD). The researchers found that cognitive activities such as reading, playing board games and playing musical instruments were associated with a lower risk of dementia. However, of eleven physical activities, 'dancing was the only physical activity associated with a lower risk of dementia'[125].

Mental health conditions such as anxiety and depression have been reduced through participation in dance and DMT. A report in the online newsletter of the Harvard Mahoney Neuroscience Institute in the Harvard Medical School states that: 'Studies show that dance helps reduce stress, increases levels of the feel-good hormone serotonin, and helps develop new neural connections, especially in regions involved in executive function, long-term memory, and spatial recognition'[126].

Survivors of sexual abuse have benefitted from DMT, with trauma reduced through the ability to give expression to pain and deeply troubling memories[127].

A new and comprehensive review of the neurobiology of dance started from the conviction that the existing body of evidence demands a start to teasing apart the neurobiological benefits of dance drawing on the discipline of Psychoneuroendocrinology.

Psychoneuroendocrinology proposes that psychology, behavior, and biology are interrelated, and that one can be accessed through the other.

The review found that dancing triggers the release of reward-related neurotransmitters, including endorphins and opioids. And dance, like all physical exercise, enhances immuno-reactivity and improves caloric equilibrium, coordination, muscle tone, and cardiovascular health. In addition, dance practice provides strong psychobiological learning opportunities. In this regard, dance provides socio-emotional coping skills, to increase self-confidence, and to boost self-esteem.

The researchers draw on the field of neuroaesthetics to highlight that skill and virtuosity of a movement trigger enhanced neural responses in sensorimotor areas of the brain. Impressive jumps and high leg stretches are rated as particularly beautiful and result in enhanced neural activity. Six functions of dance are identified (focus/flow, basic emotional experiences, imagery, communication, self-intimation, and social cohesion).

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[125] Verghese, J., Lipton, R. B., Katz, M. J., Hall, C. B., Derby, C. A., Kuslansky, G., Ambrose, A. F., Sliwinski, M. and Buschke, H. (2003), 'Leisure activities and the risk of dementia in the elderly', New England Journal of Medicine, 348: 25, pp. 2508–16.

[126] Edwards, S. (2016), 'Dancing and the brain', On the Brain: The Harvard Mahoney Neuroscience Institute Newsletter, http://neuro.hms.harvard.edu/harvard-mahoney-neuroscience-institute/brain-newsletter/and-brainseries/dancing-and-brain. Accessed 21 September 2017.

[127] Mills, L. J. and Daniluk, J. C. (2002), 'Her body speaks: The experience of dance therapy for women survivors of child sexual abuse', Journal of Counselling and Development, 80: 1, pp. 77–85.

In addition to these affecting the dancers themselves - their well-being, fitness, and biological and mental health- it appears that watching dance can engage our body and brain in a very similar way as if we were dancing ourselves[128].

In their book, *Thinking with the Dancing Brain: Embodying Neuroscience*, Sandra Minton and Rima Faber move beyond the neuroscience lab and offer an applied framework for dancers and dance teachers to discover connections between neuroscience and dance, building brain, cognition, movement and wellbeing within a well orchestrated strategy[129]. This is the beginning of a new art and science of dance for human expression and wellbeing.

Another important publication has been produced in response to the growth in dance and wellbeing scholarship: *The Oxford Handbook of Dance and Wellbeing*[130]. The handbook examines dance and related movement practices from the perspectives of neuroscience and health, community and education, and psychology and sociology to contribute towards an understanding of wellbeing, offering new insights into existing practices and innovative ones. The handbook's research components include quantitative, qualitative, and arts-based research, covering diverse discourses, methodologies, and perspectives that add to the development of a complete picture of the topic.

The Oxford Handbook of Dance and Wellbeing combines objective observations, felt experiences, and artistic explorations of practitioners with academic chapters. The result is a rich exchange of ideas in an arena where new ways of thinking place the body, movement, and dance in a central place with renewed significance for wellbeing.

We asked at the beginning of this White Paper on Mental Wellness why a movement exercise such as dance would produce changes in the meaning areas of the brain? The brain researchers studying dance take the view that dance has been from early human evolution a means of communication – communication with the divine, communication with animal spirits before a hunt, communication with weather forces, communication with ancestral spirits, as well as communication with the other dancers. Dance is a response to rhythm, music and it expresses humanity's connectedness - with one another, with the environment, with the planets and with the unseen influences in nature and the universe. As we have seen, this sense of connectedness is one of the deep foundations of mental wellness.

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[128] Julia F. Christensen, Camilo Jose Cela-Conde, and Antoni Gomila. 2017. Not all about sex: neural and biobehavioral functions of human dance. Ann. N.Y. Acad. Sci. 1400; 8–32.

[129] S. Minton, R. Faber. 2016. Thinking with the Dancing Brain: Embodying Neuroscience. Rowman & Littlelefield, Lanham, Maryland.

[130] Vassiliki Karkou, Sue Oliver and Sophia Lycouris. 2017. The Oxford Handbook of Dance and Wellbeing. 2017. Oxford University Press. Oxford.

THE ARTS

MUSIC

Gerard Bodeker

"Music hath charms to soothe a savage breast,
To soften Rocks, or bend a knotted Oak."
William Congreve, in The Mourning Bride, 1697

The effect of music on the mind and emotions has been well understood and applied throughout human history. More recently it has become the subject of study for its potential in enhancing mental health and wellness.

In a masterwork published in 2015, Eckart Altenmüller, Stanley Finger and Francois Boller have examined the full spectrum of dimensions of music, the mind, the brain and emotions. Starting with the evolutionary role of music, considering animal and birdcalls, they go on to examine evidence on 'The Musical Brain'. They proceed to an examination of perspectives on neurological and mental disorders and then to Music Therapies, their history, status and potential. In short, this work provides a multi-disciplinary overview on music processing, its effects on brain plasticity, and the healing power of music in neurological and psychiatric disorders[131]. This is now a mature field with much to show for the restorative power of music in many areas of human health and illness and wellbeing.

The work continues. New research has found that music therapy can improve anxiety and depression and enhance cognition in Alzheimer's patients[132] [133] [134]. And music played while patients are in Intensive Care Units (ICUs) has been found to abate the stress response, decrease anxiety during mechanical ventilation, and induce an overall relaxation response without the use of medication. Music may also improve sleep quality and reduce patient's pain with a subsequent decrease in sedative exposure leading to an accelerated ventilator weaning process and a speedier recovery[135].

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[131] Eckart Altenmüller, Stanley Finger, Francois Boller. Music, Neurology, and Neuroscience: Evolution, the Musical Brain, Medical Conditions, and Therapies. 2015. Volume 217. 1st Edition. Elsevier.

[132] José Enrique de la Rubia Orti, Maria Pilar Garcia-Pardo, Carmen Cabañes, José Joaquin Ceron Madrigal, Sandra Sancho Castillo, Mariano Julian Rochina, PhD, and Vicente Javier Prado Gasco. 2018. Does Music Therapy Improve Anxiety and Depression in Alzheimer's Patients? J Alt Compl Med, 24, 1, 33–36. DOI: 10.1089/acm.2016.0346

[133] Gomez GM, Gomez GJ. Music therapy and Alzheimer's disease: Cognitive, psychological, and behavioural effects. Neurologia 2016;16:4–9.

[134] Rong Fang, Shengxuan Ye, Jiangtao Huangfu and David P. Calimag. 2017. Music therapy is a potential intervention for cognition of Alzheimer's Disease: a mini-review. Translational Neurodegeneration, 6:2 https://doi.org/10.1186/s40035-017-0073-9

[135] Mofredj A, Alaya S, Tassaioust K, et al. Music therapy, a review of the potential therapeutic benefits for the critically ill. J Crit Care 2016;35:195–199.

The very low rates of dementia among professional musicians, plus enhanced cognition and perceptual abilities in elderly musicians, has led to the proposition that engagement with music training and expertise leads to greater brain reserve capacity. Brain reserve capacity is an active process whereby alternative strategies are used to perform a function and also held to correspond with a person's number of synapses and brain size[136].

And, findings from multiple studies that have been recently reviewed, show that patients with severe mental illness, with difficulties in expression and communication, obtained benefits when they participated in programs of music therapy [137].

DRUMMING

Scans of the brain have shown that the brain uses a wide distribution of areas to listen to music. The left side tends to process rhythm and pitch and the right looks after timbre and melody. There is a growing movement of drumming therapy to promote mental health and wellness and studies are beginning to emerge on its effectiveness and the associated brain correlates.

In a study done at the Karolinska Institute in Sweden, scientists who asked volunteers to keep time with a drumstick before taking intelligence tests discovered that those with the best sense of rhythm also scored highest in the tests. These participants had larger volumes of the white matter in the brain which contains connections between brain regions[138]. The researchers concluded that there was a link between intelligence, good timing and the part of the brain used for problem-solving. Prof Frederic Ullen, from the Karolinska Institute said: "The rhythmic accuracy in brain activity that is observed when a person maintains a steady beat is also important to the problem-solving capacities measured with the intelligence tests."

One study in England, involving the Royal College of Music and medical researchers at Imperial College and University College London, explored whether 10 weeks of group drumming could improve depression, anxiety and social resilience among mental health service users compared with a non-music control group. Significant improvements were found in the drumming group:

- decreases in depression
- increases in social resilience
- increases in mental wellbeing

These changes were not found in the control group and all significant changes were maintained at a three-month follow-up.

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[136] D.Omigie and S. Samson. A Protective Effect of Musical Expertise on Cognitive Outcome Following Brain Damage? 2014. Neuropsychology Review 24, 4, 445-460.

[137] Montánchez Torres ML, Juárez Ramos V, Martínez Suárez PC, Alonso García S, Torres Mendoza M (2016) Benefits of Using Music Therapy in Mental Disorders. J Biomusic Eng 4:116. doi:10.4172/2090-2719.1000116

[138] Fredrik Ullen, Lea Forsman, Orjan Blom, Anke Karabanov, and Guy Madison. 2008. Intelligence and Variability in a Simple Timing Task Share Neural Substrates in the Prefrontal White Matter. The Journal of Neuroscience, 28(16):4238–4243.

The drumming group also provided saliva samples to test for cortisol and the cytokines interleukin (IL) 4, IL6, IL17, tumor necrosis factor alpha (TNFα), and monocyte chemo-attractant protein (MCP) 1. This was in recognition of evidence that many mental health conditions are characterized by underlying inflammatory immune responses. Across the 10 weeks there was a shift away from a pro-inflammatory towards an anti-inflammatory immune profile.

These findings demonstrate the psychological benefits of group drumming and also suggest underlying biological effects, supporting its therapeutic potential for mental health[139].

And music is finding its way into wellness destination settings. In Bavaria, Germany, the luxury wellness resort, Lanserhof Tegernsee, in addition to offering energy medicine and the Mayr system's approach to colon cleansing, also provides guests with nightly classical concerts.

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[139] Fancourt D, Perkins R, Ascenso S, Carvalho LA, Steptoe A, Williamon A. 2016. Effects of Group Drumming Interventions on Anxiety, Depression, Social Resilience and Inflammatory Immune Response among Mental Health Service Users. PLoS ONE 11(3): e0151136. https://doi.org/10.1371/journal.pone.0151136

ART AND ART THERAPY

Gerard Bodeker

A British mental health charity, *Arts and Minds*, has been running weekly art workshops for people experiencing depression, stress or anxiety in Cambridgeshire for the past eight years. Run by artists, their Arts on Prescription project offers the opportunity to work with a range of materials and techniques, including printmaking and sculpture.

An evaluation of the project revealed a 71% decrease in feelings of anxiety and a 73% fall in depression; 76% of participants said their wellbeing increased and 69% felt more socially included. One participant commented: "I feel so much better having had the time and space to do some art. It makes such a difference." As the director of the charity observed: "The arts are important for wellbeing because beauty has a role in our lives. If we don't listen to that, or pay attention, then that can cause problems": https://www.theguardian.com/healthcare-network/2017/oct/11/contribution-arts-make-health-wellbeing

Building on this understanding of the role of beauty and art in enhancing the human condition, art has been used as a therapeutic means of managing and reducing mental health problems. Art therapy, as it is known, is a form of expressive therapy that uses the creative process of making art to improve a person's physical, mental, and emotional wellbeing.

Recent work taking a neurobiological and psychophysiological view of the pathology of early relational trauma, proposes that art psychotherapy poses uniquely advantageous in contrast to those of a verbal and cognitive behavioural nature[140].

A systematic review of the clinical effectiveness and cost-effectiveness of art therapy among people with non-psychotic mental health disorders has reported significant benefits from art therapy across mental health domains[141]:

Depression. Among nine studies examining depression, art therapy resulted in significant reduction in depression in six studies. In four of these six studies, art therapy was significantly more effective than the control.

Anxiety. Among seven studies examining anxiety, art therapy resulted in significant reduction of anxiety in six studies. In these six studies, art therapy was significantly more effective than the control.

Mood. Among four studies examining mood or affect, art therapy resulted in significant positive improvements to mood in three studies. In these three studies, art therapy was significantly more effective than the control.

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[140] Chui Yee Joy Chong. 2015. Why art psychotherapy? Through the lens of interpersonal neurobiology: The distinctive role of art psychotherapy intervention for clients with early relational trauma. International Journal of Art Therapy, 20, 3, 118-126.

[141] Uttley L, Scope A, Stevenson M, et al. 2015. Systematic review and economic modelling of the clinical effectiveness and cost-effectiveness of art therapy among people with non-psychotic mental health disorders. Health Technology Assessment, No. 19.18. Southampton (UK): NIHR Journals Library; 2015 Mar.

Trauma. Among three studies examining trauma, art therapy resulted in significant reduction of symptoms of trauma in all studies. While trauma improved from baseline, there was no significant difference between the art therapy and control groups in any of the three studies.

Distress. Among three studies examining distress, art therapy resulted in significant reduction of distress in all studies. In two studies, art therapy was significantly more effective than the control group.

Quality of life. In four studies examining QoL, art therapy resulted in significant improvements to some but not all components of the QoL measures in all studies. In all studies, art therapy was significantly more effective than the control.

Coping. Among three studies examining coping, art therapy resulted in significant improvements to coping resources in all studies. In one study, art therapy was significantly more effective than the control. In another study, there was no difference between groups. In the third study, significant differences between the art therapy and control groups were not reported.

Cognition. In one study examining cognition, the control group (simple calculations) exhibited significant improvements in cognitive function relative to the art therapy group.

Self-esteem. In one study examining self-esteem, art therapy resulted in significant improvements in self-esteem relative to the control group.

Another review article has also reported on the range of benefits from art therapy. Noting that art can be a refuge from the intense emotions associated with illness the authors of the study found:

1. Women taking part in a qualitative study focusing on cancer described ongoing cancer-related difficulties such as fear for the future, pain, sleeplessness, role loss, activity restriction, reduced self-confidence, and altered social relationships. Engaging in different types of visual art (textiles, card making, collage, pottery, watercolor, acrylics) helped these women in 4 major ways.
    - First, it helped them focus on positive life experiences, relieving their ongoing preoccupation with cancer.
    - Second, it enhanced their self-worth and identity by providing them with opportunities to demonstrate continuity, challenge, and achievement.
    - Third, it enabled them to maintain a social identity that resisted being defined by cancer.
    - Finally, it allowed them to express their feelings in a symbolic manner, especially during chemotherapy.

2. Participation in an arts-in-medicine program by people undergoing hemodialysis resulted in improved quality-of-life measures, with encouraging trends in terms of improvements in depression and certain laboratory and hemodialysis parameters[142].

[142] Ross EA, Hollen TL, Fitzgerald BM. Observational study of an arts-in-medicine program in an outpatient hemodialysis unit. Am J Kidney Dis 2006;47(3):462–468

3. When people are invited to work with creative and artistic processes that affect more than their identity with illness, they are more able to "create congruence between their affective states and their conceptual sense making." Through creativity and imagination, "we find our identity and our reservoir of healing. The more we understand the relationship between creative expression and healing, the more we will discover the healing power of the arts"[143].

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[143] Heather L. Stuckey, DEd and Jeremy Nobel, MD, MPH. 2010. The Connection Between Art, Healing, and Public Health: A Review of Current Literature. Am J Public Health. 100(2): 254–263. doi: 10.2105/AJPH.2008.156497 PMCID: PMC2804629.

WRITING: JOURNALING AND WRITING THERAPY

Gerard Bodeker

Poets and storytellers throughout the ages have captured and described the cathartic experience of putting pen to paper.

Martin Seligman, often referred to as the founder of Positive Psychology, describes it as: "The scientific study of optimal human functioning that aims to discover and promote the factors that allow individuals and communities to thrive"[144].

An important feature of the Positive Psychology movement, is *writing therapy*, or *journal therapy*. This has come to be a process of journaling for therapeutic benefits. Its aim is to help the user to propel their personal growth, to practice creative expression, and to feel a sense of empowerment and control over their life.

Writing therapy can be done individually or it can be guided by a mental health professional. It can be practiced in a group, with group discussions focusing on writing and can be added as a supplement to another form of therapy.

Writing therapy has proven effective for a range of mental health conditions[145][146], including:

- Post-traumatic stress
- Anxiety
- Depression
- Obsessive-compulsive disorder
- Grief and loss
- Chronic illness issues
- Substance abuse
- Eating disorders
- Interpersonal relationship issues
- Communication skill issues
- Low self-esteem

[144] Shane J. Lopez and C. R. Snyder (Eds.). 2011. The Oxford Handbook of Positive Psychology.
Second Edition. Oxford University Press. Oxford.
[145] Judith Pizarro. 2004. The Efficacy of Art and Writing Therapy: Increasing Positive Mental Health Outcomes and Participant Retention After Exposure to Traumatic Experience. Art Therapy: Journal of the American Art Therapy Association, 21(1) 5-12.
[146] Pauline Cooper. 2014. Using Writing as Therapy: Finding Identity. British Journal of Occupational Therapy, 77, 12.

SOCIAL DIMENSIONS OF MENTAL WELLNESS

Gerard Bodeker & Margareth Brepohl

The UK's Faculty of Public Health, the standard setting body for specialists in public health in the United Kingdom, emphasizes the social dimensions of mental wellness. These include: "the capacity to make health and happiness enhancing relationships with others. People with mental wellbeing know themselves and their needs, have clear boundaries, relate to others using the skills of emotional literacy and accept and manage conflict without manipulation or coercion. People with mental wellbeing are also generous, wise and compassionate. They make good decisions on behalf of others. It therefore follows that promoting the mental wellbeing of all, particularly of those who are in positions of power, is an important approach to preventing social inequality and unhealthy policy"[147].

The US Centers for Disease Control (CDC) adds that: 'Good living conditions (e.g., housing, employment) are fundamental to well-being'[148]. Yet, the CDC goes on to note: 'many indicators that measure living conditions fail to measure what people think and feel about their lives, such as the quality of their relationships, their positive emotions and resilience, the realization of their potential, or their overall satisfaction with life—i.e., their "well-being". In summary, positive mental health, well-being and flourishing refer to the presence of high levels of positive functioning—primarily in the mental health domain (inclusive of social health). However, in its broadest sense, well-being encompasses physical, mental, and social domains'.

By contrast, loneliness or social isolation is, in terms of mortality risk, comparable to established risk factors such as smoking[149]. Noting this trend, leading medical journals and public health bodies have called for an integrated and holistic policy response[150] and, in the case of the United Kingdom, a Minister of Loneliness has been appointed to tackle the problem.

In July 2011, the United Nations General Assembly passed a resolution inviting member countries to measure the happiness of their people and to use this to help guide their public policies. This was followed in April 2012 by the first UN High Level Meeting called "Happiness and Well-Being: Defining a New Economic Paradigm," chaired by Prime Minister Jigme Thinley of Bhutan[151]. That same month, the first World Happiness Report was released as a foundational text for the UN High Level Meeting. The Reports are now issued every year.

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[147] The Faculty of Public Health (FPH): http://www.fph.org.uk/concepts_of_mental_and_social_wellbeing

[148] CDC: https://www.cdc.gov/hrqol/wellbeing.htm

[149] Holt-Lunstad, J, Smith, TB, and Layton, JB. Social relationships and mortality risk: a meta-analytic review. *PLoS Med*. 2010; **7**: e1000316

[150] Cacioppo, JT and Cacioppo, S. The growing problem of loneliness. *Lancet*. 2018; **391**: 426

[151] See GWI interview with PM Mr Jigme Thinley: https://www.youtube.com/watch?v=mauACWz_zI4

The World Happiness Report 2017 identifies four factors as best representing different aspects of the social foundations of wellbeing. These are:

1. social support
2. freedom to make life choices
3. generosity
4. absence of corruption in government and business

Among the many findings cited, two key social variables—*social support* and *volunteering*—are consistently associated with better self-reported health status.

The following are variables are cited in the World Happiness Report 2017 as of broad-based influence on health and wellbeing:

The quality of social institutions has important direct effects on health, as health outcomes are better where corruption is less and government quality generally higher.

Maintaining or improving the quality of the social context, has been shown to have distinct protective and healing outcomes.

Generosity, which The World happiness Report's research has found to be an important source of happiness, also turns out to benefit physical health. Research shows that health benefits are greater for the givers than for the receivers of peer-to-peer and other forms of support.

Having someone to count on has a large impact on life evaluations even after allowing for the effects flowing through higher incomes and better health.

The World Happiness Report 2017 addresses the social foundations of happiness: "To feel secure, people need to feel that others care for them and will come to their aid when needed. To some extent, being in such a network of usually mutual obligations sets limits on each person's freedom to make life choices freely, as the interests of others must always be borne in mind. It is apparent from our results that both features are important for a good life. It is also clear from the data that these different aspects need not conflict with each other, as the most successful societies are ones where both measures of the social fabric are strong. Indeed, some of the features of the social fabric that reflect its ability to care for people, in particular the health and education systems, also serve to level out the differences in life opportunities that affect the breadth and reality of the life choices open to each individual (p.32)."

Addressing the role of generosity as a social determinant of happiness, the Report notes that: "subjective well-being research is now showing that in all cultures, and even from infancy, people are drawn to pro-social behaviour, and that they are happier when they act pro-socially (p.32)".

In a similar vein, the UK's Faculty of Public Health makes a strong case that: "Respectful, compassionate, authentic government, families and organisations are important in the creation of collective mental wellbeing"[152].

Childhood appears to be the place to start in building this social context for wellbeing. Noting that many of the problems of adulthood can of course be traced back to childhood and adolescence, the World Happiness Report 2017 outlines three key

[152] FPH: http://www.fph.org.uk/concepts_of_mental_and_social_wellbeing

dimensions of child development that best predict whether an adult is satisfied with life:

1. intellectual development
2. behavioural development
3. emotional health

While parental income is a good predictor of a child's academic performance, it turns out that the best predictor of a child's emotional health is the mental health of the mother. Remarkably, the World Happiness Report 2017 found that which school a child went to (both primary and secondary) predicts as much of how the child develops as all the characteristics that can be measured of the mother and father.

Other recent research looked at shy children with low vocabulary skills and found that they can be popular among their peers if they have high-functioning social communication skills - e.g. ability to recognise when others are upset; ability to adapt and communicate based on situation and audience. While parents tend to focus on increasing a child's vocabulary to improve communication, high social communication skills appear to help shy children, increase their peer acceptance and friendships, which enhances wellbeing[153].

The social dimensions of wellbeing have given rise to the growth of wellness communities, characterized by the Global Wellness Communities Initiative (GWCI) of the Global Wellness Institute as: "communities proactively developed with the holistic health of its residents, environment (natural and built) and local community in mind[154]". The GWCI identifies three principles that a community must demonstrate, at a minimum, to be deemed 'well':

1. ***Environmental consciousness*** demonstrated by sustainable development and operating practices
2. ***Holistic health and wellness*** demonstrated by offering residents opportunities via program and facilities – whether indoor or outdoor – to proactively take care of themselves and enhance their overall quality of life and wellbeing.
3. ***Social connections*** demonstrated by both physical and programmatic elements that foster intergenerational socialization and connectivity among fellow residents.

Highlighting the importance of this emerging trend is the commercial value ascribed to this sector by the Global Wellness Institute's research – viz. $120 billion and growing[155].

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[153] Hoi Shan Cheung et al, Child shyness and peer likeability: The moderating role of pragmatics and vocabulary, *British Journal of Developmental Psychology* (2017). **DOI: 10.1111/bjdp.12192**

[154] GWCI: http://www.globalwellnesssummit.com/wp-content/uploads/2017/09/Wellness-Communities-Initiative-Briefing-Paper-2017.pdf

[155] Redefining What it Means to Live Well: Exploring Lifestyle Communities and Wellness Real Estate.https://static1.squarespace.com/static/54306a8ee4b07ea66ea32cc0/t/58f687f71e5b6ce1b44231a7/1492551672466/Wellness+Communities+%26+Lifestyle+Real+Estate+Roundtable7_rev41817.pdf

ECONOMIC FACTORS INFLUENCING MENTAL WELLNESS

Gerard Bodeker & Alina Hernandez

A systematic review of over a hundred research studies on mental health outcome in times of economic recession found that periods of economic recession are possibly associated with a higher prevalence of mental health problems, including common mental disorders, substance disorders, and ultimately suicidal behaviour[156].

A 2017 study used meta-analytic tools to examine research on income inequality and mental illness. The study, published in Lancet Psychiatry, found that income inequality does negatively affects mental health but that the effect sizes are small. The researcher comment that: "If this association is causal and growing income inequality does lead to an increase in the prevalence of mental health problems, then its reduction could result in a significant improvement in population wellbeing" (p. 554)[157].

Regarding the effect of income on happiness, the World Happiness Report 2017 drew on mental health surveys from the USA, Australia, Britain and Indonesia. They found that in the three Western societies, diagnosed mental illness emerges as more important than income, employment or physical illness as a determinant of happiness. In Indonesia, while mental health is important, it is less so than income. The relative income level of a country and the priorities of its people determine the extent to which income impacts on happiness. By and large, as national income levels rise, happiness does not rise. This is because people compare their income levels with others and a relative rise is not a source of happiness.

In asking whether the same factors effect misery as effect life satisfaction, one survey used by the World Happiness Report team examined how much misery could in principle be eliminated by eliminating either poverty, low education, unemployment, living alone, physical illness or mental illness. They found that in all countries the most powerful effect would come from the elimination of depression and anxiety disorders, which are the main form of mental illness. This turns out to be the least costly way of reducing misery[158]. As can be seen from the many bodies of evidence referenced in this report, depression and anxiety respond readily to the many paths to mental wellness available today – paths that can be self-managed and are of low cost or no cost.

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[156] Frasquilho D, Matos MG, Salonna F, Guerreiro D, Storti CC, Gaspar T, Caldas-de-Almeida JM. Mental health outcomes in times of economic recession: a systematic literature review. BMC Public Health. 2016 Feb 3;16:115. doi: 10.1186/s12889-016-2720-y.

[157] Ribeiro WS, Bauer A, Andrade MCR, York-Smith M, Pan PM, Pingani L, Knapp M, Coutinho ESF, Evans-Lacko S. Income inequality and mental illness-related morbidity and resilience: a systematic review and meta-analysis. Lancet Psychiatry. 2017 Jul;4(7):554-562. doi: 10.1016/S2215-0366(17)30159-1. Epub 2017 May 25.

[158] World Happiness Report 2017, Chapter 2: http://worldhappiness.report/wp-content/uploads/sites/2/2017/03/HR17-Ch5_w-oAppendix.pdf

SPIRITUALITY AND FAITH

Gerard Bodeker & Alina Hernandez

"The Lord lives in the heart of every creature. He turns them round and round upon the wheel of Maya. Take refuge utterly in Him. By his grace you will find supreme peace, and the state which is beyond all change." *Hinduism*

"If a man sings of God and hears of Him, And lets love of God sprout within him, All his sorrows shall vanish, And in his mind, God will bestow abiding peace." *Sikhism*

"A Muslim is one who surrenders to the will of Allah and is an establisher of peace." *Islam*

"The whole of the Torah is for the purpose of promoting peace." *Judaism*

"The Kingdom of Heaven is within". "Blessed are the peacemakers for they shall be called sons of God." "Love is the greatest commandment of all." --*Christianity*

"Peace … comes within the souls of men when they realize their relationship, their openness, with the universe and all its powers and when they realize that at the center of the universe dwells Wakan-Tanka, and that this center is really everywhere, it is within each of us."--*From The Sacred Pipe, by Black Elk, Lakota Sioux Medicine Man*[159].

These expressions of the essence of faith from different religious traditions highlight the inner nature of the faith experience and its translation into higher human experiences such as love, peace and happiness.

Two forms of happiness are identified in India's classical Vedic tradition,: one is situational happiness – when we achieve a goal, enjoy time with friends or family, etc; the other is a state of happiness, inner happiness that comes from deep connectedness with one's own nature and with the universe itself, often aided by meditation and spiritual exercises.

Over the past decade or more, there has been a steady growth in international research into quality-of-life and spirituality. Quality-of-life studies and systematic reviews of these have found consistent evidence of an association between quality-of-life and religiosity/spirituality (R/S), through studies with reasonable methodological rigour, using several variables to assess R/S (e.g. religious affiliation, religious coping, and prayer/spirituality)[160].

Elsewhere, reviews of research in this field have found that religious coping has implications for physical health, psychological well-being, health behaviours, and

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[159] From: Groff L, Smoker P. Spirituality, Religion, Culture, and Peace: Exploring the Foundations for Inner-Outer Peace in the Twenty-First Century. The International Journal of Peace Studies. 1996, vol 1, 1.

[160] RG Panzini et al. Quality-of-Life and spirituality. Int Rev Psychiatry 29 (3), 263-282. 6 2017.

feelings of efficacy[161]. Despite this, research has shown that many clinicians either ignore an individual's spiritual life completely or treat their spiritual experiences as nothing more than manifestations of psychopathology[162]. Reasons for this include:

1) Lack of awareness about the important role of spirituality in people's lives
2) Fear of overstepping professional boundaries
3) Lack of information for appropriate tools to use
4) Considered to be unimportant

In Britain the Royal College of Psychiatrists issued guidelines in 2013 titled *Recommendations for psychiatrists on spirituality and religion*. These summarised the evidence base of several hundred studies on spirituality, religion and mental health outcomes and provide a framework for mental health professionals to address this dimension of experience in the context of enhancing mental health and wellbeing[163].

A British study has argued that while religious participation or belief may predict better mental health, "most research is American and measures of spirituality are often conflated with well-being"(p.68). These researchers conducted a national survey in the United Kingdom and found that people who consider themselves spiritual but not religious are more likely to have a mental disorder compared to conventionally religious people and to those who are neither religious nor spiritual[164]. This is an ongoing debate among researchers on spirituality and mental health, some of whom argue that spirituality has been so re-defined that it has come to be virtually synonymous with mental health and thus, is tautological as a concept in research. Another view is that spirituality is central to mental wellbeing and should be included in wellbeing studies.

Yet, as we will see in the next section, lived spiritual experience – a state of inner happiness and universal connectedness - has been viewed as the highest level of human attainment in both Western and Eastern traditions. Increasingly neuroimaging studies are providing a foundation to understand that spiritual experience and development may constitute a measurable and unique state of higher human functioning.

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[161] Myleme O. Harrison, Harold G. Koenig, Judith C. Hays, Anedi G. Eme-Akwari & Kenneth I. Pargament. The epidemiology of religious coping: a review of recent literature. International Review of Psychiatry Volume 13, 2001 - Issue 2, 86-93

[162] Nazir S. What proportion of psychiatrists take a spiritual history? Royal College of Psychiatrists. 2010. https://www.rcpsych.ac.uk/pdf/Saliha%20Nazir%20What%20proportion%20of%20Psychiatrists%20take%20a%20spiritual%20history%20Edited.x.pdf

[163] C. Cook. Recommendations for psychiatrists on spirituality and religion. Royal College of Psychiatrists. 2013. https://www.rcpsych.ac.uk/pdf/PS03_2013.pdf

[164] King M, Marston L, McManus S, Brugha T, Meltzer H, Bebbington P. Religion, spirituality and mental health: results from a national study of English households. Br J Psychiatry. 2013 Jan;202(1):68-73. doi: 10.1192/bjp.bp.112.112003. Epub 2012 Nov 22.

WHAT IS CONSCIOUSNESS AND WHAT IS ITS PLACE IN MENTAL WELLNESS?

Gerard Bodeker

"It might turn out that a really consistent theory of physics could lead us to understand exactly what consciousness is. But it might not[165]".

The American Psychological Association has recently established a new journal: *Psychology of Consciousness: Theory, Research and Practice*[166], a cross-disciplinary journal that encompasses neuroscience, social, cognitive, experimental, and clinical psychology. However, the journal offers no clear definition of 'consciousness'. Elsewhere there is debate about the definition, with clear differences between 'consciousness of' and 'conscious awareness' linked to higher levels of human functioning and awareness[167].

Yet, what has moved ahead is the neuroscience of consciousness where the correlates of human consciousness have been examined over two or more decades of research and much is now known, although it is still seen as mostly a science of correlation and not yet a science of explanation. The problem of how and why and how we are aware is not addressed deeply through neuroscience alone, but needs partnerships with philosophy and, some would say, cross-cultural psychology and theories of higher stages of human development.

In understanding consciousness, the philosopher David Chalmers, author of the landmark book "The Conscious Mind", has distinguished between the Easy Problem and the Hard Problem: "The easy problems of consciousness are those that seem directly susceptible to the standard methods of cognitive science, whereby a phenomenon is explained in terms of computational or neural mechanisms. The hard problems are those that seem to resist those methods... The really hard problem of consciousness is the problem of *experience*[168]."

Experience is the starting point for the study and development of consciousness on non-Western traditions, as we shall see in the section in this White Paper, titled *Higher Human Potential*. However, sufficient is known about consciousness in neuropsychology for pathways to be delineated for effective and optimal adult functioning. Drawing on these discoveries, in the following section neuroscience-based leadership trainer and coach, Dr. Daniel Friedland MD, CEO of SuperSmart Health and a member of the Mental Wellness Initiative outlines some key points steps in the path to what is termed 'Conscious Leadership'.

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[165] Kristian Marlow. What is Consciousness? *Psychology Today:* https://www.psychologytoday.com/blog/the-superhuman-mind/201303/what-is-consciousness

[166] http://psycnet.apa.org/PsycARTICLES/journal/cns/4/3

[167] Oliver Burkeman. Why can't the world's greatest minds solve the mystery of consciousness? The Guardian. 21 Jan, 2015. https://www.theguardian.com/science/2015/jan/21/-sp-why-cant-worlds-greatest-minds-solve-mystery-consciousness

[168] David Chalmers. Facing up to the problem of consciousness. *Journal of Consciousness Studies* 2(3):200-19, 1995.

CONSCIOUS LEADERSHIP

Daniel Friedland, MD
CEO SuperSmart Health

Conscious Leadership emphasizes creating and sustaining an optimal leadership mindset with the goal of creating purpose driven, strategically focused thriving organizations, especially vital in times of stress and overwhelm.

It takes leaders who flourish with mental wellness and well being to cultivate organizations that thrive with wellness and well-being.

The term, *Conscious Leadership*, has been popularized by Conscious Capitalism, an organization established and engaged by leaders of companies such as Whole Foods, Southwest Airlines and Starbucks, to elevate humanity through the practice of conscious business.

The 4 key principles of conscious business include[169]:

1) Higher Purpose
2) Stakeholder Orientation
3) Conscious Leadership
4) Conscious Culture

Conscious Capitalism states that "Conscious Leaders focus on 'we,' rather than 'me.' They inspire, foster transformation and bring out the best in those around them. They understand that their role is to serve the purpose of the organization, to support the people within the organization and to create value for the all of the organization's stakeholders. They recognize the integral role of culture and purposefully cultivate a Conscious Culture of trust and care.[170]"

Companies with healthy leaders not only create healthy organizations. They have also been shown to manifest a healthy bottom line. Raj Sisodia, researched 28 companies that were closely aligned to Conscious Capitalism principles. In his book Firms of Endearment: How World-Class Companies Profit from Passion and Purpose" he studied the cumulative performance of these companies over a fifteen-year period from 1998 through 2013 and found these high-performing organizations have outperformed the S&P by a factor of 14 to 1[171].

In *Leading Well from Within: A Neuroscience and Mindfulness-Based Approach to Conscious Leadership*, Dr. Daniel Friedland outlines the core qualities of High Performance Conscious Leaders[172]. These leaders embody a Creative Mindset. They

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169 Conscious Capitalism, "The Four Principles of Conscious Capitalism," accessed July 15, 2017, http://www.consciouscapitalism.org.

170 Ibid

171 Raj Sisodia, David B. Wolf, and Jagdish Sheth, Firms of Endearment: How World-Class Companies Profit from Passion and Purpose (Upper Saddle River, NJ: Pearson Prentice Hall, 2007) and the companion webpage, accessed July, 15, 2017, http://www.firmsofendearment.com/.

172 Daniel Friedland, Leading Well from Within: A Neuroscience and Mindfulness Based Framework for Conscious Leadership (San Diego, CA: SuperSmartHealth, 2016).

relate well to others and are self-aware, present, resilient, authentic, compassionate and courageous. They also have clear vision, are strategically focused and know how to get purpose-driven results.

These leaders are masterful communicators and collaborators. They inspire trust and confidence. Since we are wired to connect, these qualities cascade into an organization. This creates a healthier, energized, and actively engaged culture that has been shown to drive business performance and a thriving enterprise.

Among the greatest threats to Conscious Leadership is unmanaged stress. Stress may instinctively activate survival parts of your brain that prevent conscious awareness, empathy and innovation. This typically results in a Reactive Mindset, exhibited by fight and flight-related fear-based reactions and qualities associated with Low Performance Leadership. Unmanaged stress can impede the ability of leaders to think clearly, fully connect with and inspire others, and lead to destructive conflict, or worse yet artificial harmony, both of which yields an unhealthy culture of disengagement.

While research clearly shows that stress can damage health, relationships and productivity, the new science of stress shows that certain types of stress can actually protect health, enhance relationships and fuel a Creative Mindset and High Performance Conscious Leadership.

Leading Well from Within, presents a 4 in 4 Framework to Engage Conscious Leadership, a 4-step neuroscience and mindfulness-based process with which leaders can more effectively navigate stress and proactively shift from a reactive to a creative mindset[173].

The 4 steps of this framework are:

1) Recognizing and Managing Reactivity
   Enables you to recognize your reactive sensations, thoughts, feelings and behaviors and specific steps to take the edge off these reactions to find greater composure in the heat of the moment if they are doing you and others more harm than good.

2) Reappraising Stress and Self-Doubt
   Enables you to reframe the way you experience stress and self-doubt so you feel greater security in neutralizing their harmful effects, as well as greater confidence in being able to redirect, leverage and better focus this energy as an asset to achieve the outcomes that matter most.

3) Cultivating Creativity
   Empowers you to align your vision, strategy, implementation and desired results so you can optimize your health, relationships and work to experience greater significance and fulfillment in your life

4) Catalyzing Growth
   Transforms your internal dialogue by showing you to mindfully ask better questions and find, evaluate and apply your answers to continually learn and grow.

[173] Ibid

These steps are not only key for deepening your emotional intelligence and intrapersonal connection to lead well from within. They are also vital to enhancing your social intelligence and interpersonal connection with others, and your spiritual intelligence and transpersonal connection with your highest source of inspiration, to lead well in the world!

As you engage these steps as a Conscious Leader, you continually expand your ability to inspire, influence and cultivate a consciously engaged, high performing and purpose driven culture that can make an even bigger difference in the lives of those who you serve.

HIGHER HUMAN POTENTIAL – BEYOND ORDINARY LIMITS

Alina Hernandez & Gerard Bodeker

The American psychologist, Abraham Maslow (1908-1970), was one of the most influential thinkers of the twentieth century. Maslow founded both Humanistic Psychology and Transpersonal Psychology, sub-fields of psychology that focus on positive human experience rather than on the pathology that had been the prevailing focus of previous schools of twentieth century psychology.

Humanistic Psychology aims to examine what is *right* with people, rather than just what is *wrong* with them. Its focus is on psychological health and well-being rather than on mental-emotional-behavioural disorders.

Transpersonal Psychology goes much further than this and explores extreme wellness or optimal wellbeing. It is interested in those cases of persons who have often or perhaps permanently expanded their "normal sense of identity" to include the *supra*- or *trans*-personal sometimes expressed as the Self of all selves, the One underlying the Many. Transpersonal Psychology explicitly acknowledges and makes use of the profound spiritual psychologies of Hinduism, Buddhism, Taoism, mystic Christianity, Judaism and Muslim Sufism. As well, it works to generate new insights and methods in the human potential and consciousness-expanding movements.

Maslow is mostly remembered for his stage theory of human development and the end stage of Self-Actualization, viz. the growth of an individual toward fulfilment of the highest needs.

However, Maslow went further in his later writings and addressed the deep question of how far human development can go. Here he focused on what he called Transcendence:
‘‘*Transcendence refers to the very highest and most inclusive or holistic levels of human consciousness, behaving and relating, as ends rather than means, to oneself, to significant others, to human beings in general, to other species, to nature, and to the cosmos.*[174] ’’

By placing transcendence, or ‘self-transcendence’, above self-actualization, Maslow had produced a radically different model of the end-stage or highest level of human development.

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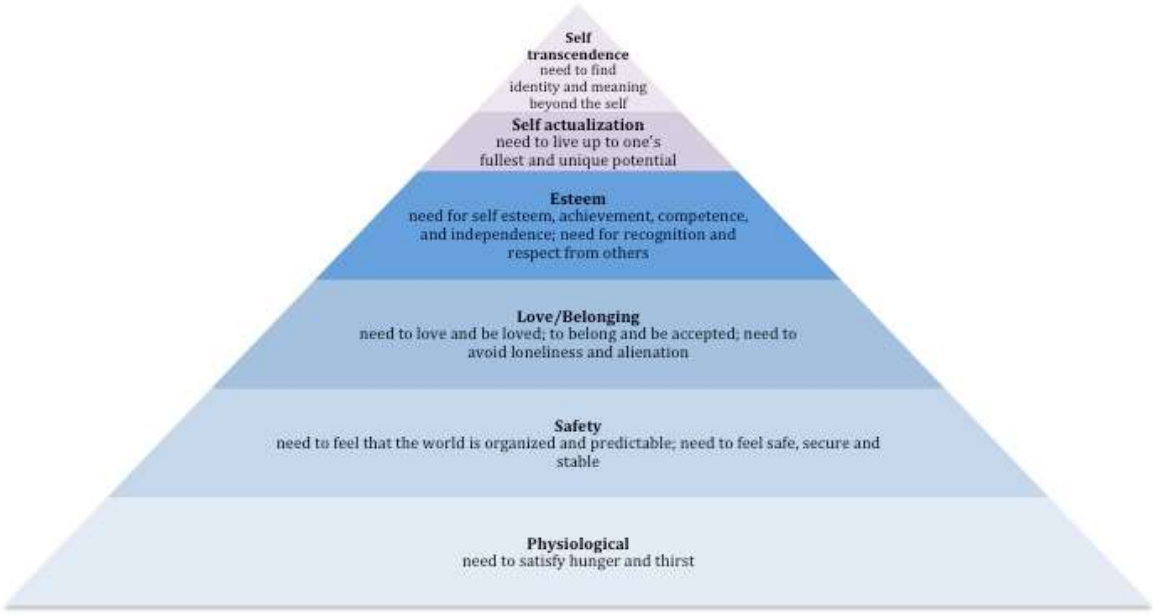
[174] Abraham Maslow, The Farther Reaches of Human Nature. New York, Viking Press, 1971, p. 269.



Maslow's Hierarchy of Needs

Whereas self-actualization refers to fulfilling an individual's own potential, self-transcendence puts the person's needs aside to serve something greater than the self.

In the process, self-transcenders may have what Maslow called peak experiences, in which they transcend personal concerns. In these states, the individual feels intense joy, peace, wellbeing, and an awareness of ultimate truth and the unity of all things[175]. These state could be transitory or they could be stabilised and permanent, depending on an individual's stage of development within the stage of self-transcendence.

There has been little empirical evaluation of this final stage of Maslow's stage theory of human development, but one study used a combination of quantitative and qualitative methods to examine the correlation between self-transcendence and psychological and subjective wellbeing[176].

Quantitative data demonstrated positive correlations between ego-transcendence, or self-transcendence, and subjective well-being , psychological well-being, quality of life, and mindfulness. Conversely, ego-transcendence correlated negatively with depression, anxiety and narcissism.

Data showed the high ego-transcenders to be happy, satisfied with specific aspects of daily life and wellbeing and not dependent on external circumstances or events for their sense of wellbeing.

The qualitative findings concurred. Qualitative data demonstrated that high ego-transcendent people compared to low ego-transcendent people:

- have a greater sense of stability in their well-being, which tends to not diminish as external conditions change;

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[175] http://reasonandmeaning.com/2017/01/18/summary-of-maslow-on-self-transcendence/#

[176] C.R. Zappala. Well-being: The correlation between self-transcendence and psychological and subjective well-being. Institute of Transpersonal Psychology, ProQuest Dissertations Publishing, 2007.

- perceive happiness and well-being as a choice on a daily basis;
- derive their well-being from their work, close relationships, exercise and a spiritual practice;
- have a high sense of optimism which is not focused so much on egoist achievements, but rather on deeper interpersonal relationships and the service of humanity (purpose in life); and
- have an ability to dis-identify with self, which seems to allow them to develop deeper states of being such as the ability to reflect on meaning of both positive and negative events rather than react impulsively to them, focus on process rather than achievement, accept conditions rather than judge them, the ability to be mindful rather than to dwell on the past or the future, and they are more focused on finding their purpose in life rather than on determination.

It has been noted that there are hundreds of theories of adult development[177]. Among these the Harvard moral philosopher, Lawrence Kohlberg, developed in the late stages of his life a theory that took moral development to a stage that had a universal or spiritual nature. In this 7th stage of Kohlberg's theory of moral development, individuals focus on why they should be moral from a non-dualistic perspective that involves being part of the whole of life and nature with a cosmic perspective.

Here, Kohlberg and his former student and co-author, Robert Ryncarz, propose: "there is a cognitive structure through which one experiences one's own ideas about the right and the just as reflecting basic patterns of the cosmos, and experiences one's ethical actions as expressions of natural laws"[178]. Ryncarz had introduced Kohlberg to the Vedic Science teachings of Maharishi Mahesh Yogi, founder of Transcendental Meditation, where transcendence leads to a unified experience of life and the individual's place within the natural and moral order.

As with Maslow's transcendental stage of adult development, in Kohlberg's 7th stage of moral development there is a universal sense of identity. Perhaps drawing on his own experience, Kohlberg posited that this could be experienced only temporarily, whereas Maslow proposed it as a potentially permanent and established state of being.

The American transpersonal psychology theorist, Ken Wilber, built a bridge that had not been present previously. That bridge was between the type of thinking reflected in the higher stages of Maslow and Kohlberg on the one hand and the views of spirituality and higher stages of human functioning originating in India's Vedic tradition of knowledge on the other.

Wilber draws on the teachings of the Indian spiritual teacher Sri Aurobindo to posit that the individual's evolution proceeds through the successive stages of matter, life, and mind, and beyond the ordinary mental level to progressive stages of higher spiritual consciousness, and finally the Absolute[179].

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[177] Lynn Rasmussen. The Self as a System of Processes. http://necsi.edu/events/iccs7/papers/256RasmussenLearningNeural.pdf

[178] Kohlberg, L. and Ryncarz, R., 1990, Beyond Justice Reasoning: Moral Development and Consideration of a Seventh Stage, in Higher Stages of Adult Development edited by C. Alexander and E. Langer, Oxford University Press (New York).

[179] For more on these theorists of higher stages of human development, see: http://www.lukat.it/stage-development-theorists.pdf

Born in Calcutta and educated in England from a young age, Aurobindo's education culminated with his studies at Cambridge University. He was an intellectual who analyzed human and social evolution intensely. Aurobindo developed the concept of *Integral Yoga,* which does not propose any kind of physical techniques but is more psychological in nature, with internal reflection and self-analysis and correction as the main tools of development. Through his own spiritual practices, Aurobindo developed insights into the nature of consciousness itself and characterized two major attributes or forms of consciousness. One aspect is of universal consciousness expressing in individualized form. The other is the reverse – an individual keeping the awareness of the Whole or the Oneness while acting within the world of division and fragmentation. It is a process of consciousness moving from whole to part to whole again. This is quite within the broad framework of India's Vedic philosophy.

Why, in an investigation of paths to mental wellness are we examining these Eastern views of consciousness?

To those new to this perspective, they can seem vague and inaccessible. But they do contain a remarkable consistency across theories and have at their core the experience that techniques for the development of consciousness, such as meditation, are of central importance in enabling humans to move to higher levels of development and capabilities. They are also of central importance in mapping the territory of what is there to be experienced. Sharing this is part of the responsibility of those who experience it. In the words of the Rig Veda:
"*He who knows the country tells the direction to him who asks the way.*"

And what was the 'country' that they knew?

Vedic Psychology. The early masters of India's ancient Vedic tradition, in the words of philosopher Kenneth Chandler, "discovered the capability of the human mind to settle into a state of deep silence while remaining awake, and therein to experience a completely unified, simple, and unbounded state of awareness, called pure consciousness, which is quite distinct from our ordinary waking, sleeping, or dreaming states of consciousness. In that deep silence, they discovered the capability of the mind to become identified with a boundless, all-pervading, unified field that is experienced as an eternal continuum underlying all existence.[180]"

What Chandler describes here is a centrally important process that is missing from the works of the Western developmental theorists about how higher stages of human development and states of human experience are attained, I.E. the process of going within via a meditative practice.

By positioning consciousness at this junction point between the observable world and the inner, subjectively experienced field of awareness, meditation takes the mind to a deeper level where inner and outer are unified. Maharishi Mahesh Yogi, who in the 1950's brought a Vedic meditation technique to the West – known by the western name of Transcendental Meditation – is quoted as describing the experience of this unified field of consciousness as "an experience of a completely unchanging, unbounded unity of consciousness, silently awake within itself. Gaining intimate familiarity with the silence of pure consciousness, one gains the ability to experience

[180] Kenneth Chandler, Modern Science and Vedic Science: An Introduction. 1987. Modern Science and Vedic Science 1:1.

within that silence an eternal "fabric" or "blueprint" of all laws of nature that govern the universe, existing at the unmanifest basis of all existence".

In the framework of Maharishi's Vedic Science, through meditative practice, the individual gains the ability to experience a simple, unified, undifferentiated, self-referral state of pure consciousness, called *samhita* in Vedic literature, in which knower, known, and process of knowing are one and the same.

From these descriptions it can be seen clearly that the higher stages of functioning characterized by Maslow, Kohlberg and Wilber, among others, ARE the same state of universal consciousness described by Eastern seers who have accessed this experience through the practice of deep meditation.

What is different between the West and the East is that the West does not look to any particular technology of consciousness, such as meditation, as the means to achieve higher states of human experience and functioning. Rather, Western theories see this as an unfolding process of stages of development that may or may not end up in individuals reaching their full potential.

The Eastern view is that higher human experiences begin immediately with the practice of meditation and become stabilized over time through regularity of practice. In terms of paths to mental wellness and individuals fulfilling their full potential, the Vedic view is that meditation is the way and that human potential is infinite; that consciousness is unfolded and developed effortlessly as a result of the experiences gained through meditation.

Buddhist Psychology. The teachings of the Buddha are rooted in what today would be termed psychology. Buddhist concepts of mindfulness, '*ahimsa*' - non-violence, '*sila*' – right speech, right action, right livelihood, and nirvana – enlightenment or attainment of the highest human potential, have found their way into humanistic and transpersonal psychology and are now, in varying degrees, mainstream concepts in positive psychology and Buddhist psychotherapy[181]. Since 1987, the Dalai Lama has convened "Mind and Life" gatherings of Buddhists and scientists, based on the foundation that "since the time of Gautama Buddha in the 5th century BC, an analysis of the mind and its workings has been central to the practices of his followers"[182].

In 1979, Dr. Jon Kabat-Zinn of the University of Massachusetts Medical Center's "Center for Mindfulness in Medicine, Health Care and Society" recruited chronically ill patients not responding well to traditional treatments to participate in his newly formed eight-week stress-reduction program, now called Mindfulness-Based Stress Reduction (MBSR). Since then, substantial research has mounted demonstrating how mindfulness-based interventions improve mental and physical health—comparably so to other psychological interventions. It is now taught in over 250 US hospitals. Mindfulness meditation, as we have seen has been subject of extensive research and the brain changes and documentation of the accompanying experiences of inner fulfillment are providing the evidence base for the higher stages of human development framework outlined in the original Buddhist teachings.

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[181] Tapas Kumar Aich. Buddha philosophy and western psychology. Indian J Psychiatry. 2013 Jan; 55(Suppl 2): S165–S170. doi: 10.4103/0019-5545.105517 PMCID: PMC3705677.

[182] Goleman D, editor. Healing Emotions: Conversations with the Dalai Lama on Mindfulness, Emotions, and Health. Boston: Shambhala Publications; 1997.

It is certainly true that other great religious traditions have seen explorations of their teachings from the perspectives of psychological insight and intervention[183] [184] [185]. What is striking about Eastern spiritual traditions is their concise characterization of higher stages of human development and the articulation of methodologies to achieve these stages and states of awareness.

In the world of science, these various theories and their associated methodologies for developing consciousness have been held up to scrutiny and a body of research evidence has been building over the past four decades offering a neuroscience map of what higher levels of human functioning look like.
"Science is not only compatible with spirituality; it is a profound source of spirituality. When we recognise our place in an immensity of light years and in the passage of ages, when we grasp the intricacy, beauty and subtlety of life, then that soaring feeling, that sense of elation and humility combined, is surely spiritual…The notion that science and spirituality are somehow mutually exclusive does a disservice to both." Carl Sagan (1979)[186].

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[183] Judaism: http://www.jewishpsychology.org/about1_e.php
http://www.chabad.org/library/article_cdo/aid/295989/jewish/A-Psychology-of-Motivation.htm
[184] Christianity: https://en.wikipedia.org/wiki/Christian_psychology
http://www.christianpsych.org/wp_scp/
[185] Islam: http://www.cambridgemuslimcollege.org/course-in-islamic-psychology/
https://explorable.com/islamic-psychology
[186] Carl Sagan. Broca's Brain: Reflections on the Romance of Science. 1979. Random House, New York.

PART 2

SPA AND WELLNESS INDUSTRY EVIDENCE AND GUIDELINES

OVERVIEW – PART 2

Part 2 of the White Paper looks at Mental Wellness from the perspective of the Wellness Industry. A survey has been designed by Fikry Isaac MD, Vanessa Stoessel, and Robert Ranzi for both wellness professionals and wellness center managers. As data come in from this survey, findings will be shared via the Global Wellness Institute on the state of thinking as well as policy and practice in mental wellness in the wider industry.

Also in Part 2, there is a focus on *Caring for the Carers*, presented by Nancy Board PhD and Vivienne O'Keeffe and Beata Aleksandrowicz. Starting with Mental Wellness *'at home'* is the recommendation of this section of Part 2, with case studies offered of model programs.

All of this has implications for the values and ethics that underpin the wellness industry. With the global call for respect in workplace settings and in gender relations, the opportunity is there for the wellness industry to take a lead in promoting values that create environments of mental wellbeing.

With input from the global wellness community, these industry perspectives will become expanded and sharpened. For now, the flag has been placed in the ground and the territory has begun to be mapped.

GLOBAL TRENDS IN SPA AND MENTAL WELLNESS

Gerard Bodeker

The Global Wellness Institute's 2016 report on the value of the global wellness industry[187] found that the fastest growing sector was preventative and personalised medicine and public health, which increased in size by more than 23.5%. This sector includes programs and services on mental wellbeing.

Over a two-year period, the global spa market grew 2.3% to $99bn and was forecast to grow by a further 6% by 2020. Spa facility revenues were worth $77.6bn (£63.8bn) globally, while the revenue from education, consulting, associations, media, and event sectors that enable spa businesses was worth $21bn (£17.2bn).

Mental wellness and spa programs

Clearly, mental wellness is a key goal of the spa industry with its widely stated focus on mind and body – and, sometimes, spirit. And, in the spirit of basing health and wellness claims on evidence, researchers have begun investigating the substance of industry claims to enhance the mental wellbeing of spa guests.

Researchers Robert Herron, PhD, and John Fagan, Ph.D. evaluated the outcomes of an Ayurvedic detoxification program known as panchakarma. They pre- and post-treatment blood levels of the highly toxic PCBs and Beta-HCH, industrial chemicals found in pesticides and other contaminants in the food chain, which are known to attach to the lipid layers that surround the body's cells. *Lipophilic toxicants* can cause hormone disruption, immune system suppression, reproductive disorders, and several types of *cancer*.

The study found that after just a five-day detoxification program, PCBs and Beta-HCH substances were reduced by 46 and 48 percent respectively.

The authors note that without this detoxification program, the natural expected drop in PCB and Beta-HCH over a two-month period is only a fraction of one percent. No other method has been scientifically verified to reduce fat-soluble toxins in the human body without causing negative side effects. Normally these fat-soluble substances remain in the body for many years, but the research found that panchakarma offers a viable means of coping with the effects of a toxic world.

In other research on the Ayurvedic massage system (abhyanga) that is part of the panchakarma regimen, a pilot study found high statistically and clinically significant reductions in subjective stress experience.
Analysis of physiological data indicated reductions in heart rate during and after abhyanga. While a reduction in blood pressure was not recorded for the total sample, it was only found in the pre-hypertensive subgroup[188].

A French study on the benefits of a two-week spa program with women who had undergone breast cancer treatment noted that quality of life after breast cancer is a

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[187] Global Wellness Institute: https://www.globalwellnessinstitute.org/press-room/statistics-and-facts/

[188] Annetrin Jytte Basler. The Journal of Alternative and Complementary Medicine. May 2011, 17(5): 435-440.https://doi.org/10.1089/acm.2010.0281

major challenge, because of side effects such as depression, weight gain and fatigue. The study found that the multi-modality spa treatment reduced both anxiety and depression levels in the 250 women in the spa program, with stronger and longer lasting effects for reductions in depression[189].

Addressing the rising trend of wellness tourism worldwide, Professor Marc Cohen of RMIT University in Australia and his colleague asked the question: Do wellness tourists get well? To answer this very important question the research team evaluated the outcomes of a holistic, one-week, residential, retreat experience that included many educational, therapeutic, and leisure activities and an organic, mostly plant-based diet.

At the end of the retreat, the researchers found statistically significant improvements in reductions in abdominal girth (2.7 cm), weight (1.6 kg), and average systolic and diastolic pressure (−16.1 mmHg and −9.3 mmHg, respectively). They also recorded statistically significant improvements in psychological and health measures. And, addressing the detox question again, urinary pesticide metabolites that were detected in pooled urine samples before the retreat were undetectable after the retreat[190].

Hot springs and various forms of thermal bathing are becoming an increasing feature in wellness spas and resorts globally. Moroccan hamam traditions and Japanese *onsen* traditions as well as European traditions of thermal bathing have all provided cultural models from which contemporary spas draw.

The RMIT research group led by Professor Marc Cohen, who also serves as a Board Member of the Global Wellness Institute and chairs the GWI's World Retreat Initiative[191], noting that hot springs are a $50 billion global industry and a growing segment of the wellness tourism sector, have drawn attention to the fact that research had not focused on the views of hot spring users regarding their motivations and experiences from using hot springs. The RMIT team's study on 4265 mostly female respondents found that "relaxation", "peace and tranquility", "indulgence" and "escape" were the most important motivators for bathing. Most respondents reported general health benefits (98%) and better sleep (82%) from bathing, one third experienced fainting/dizziness. One third of respondents also had medical conditions.

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[189] F. Kwiatkowski, M.A. Mouret-Reynier, M. Duclos, A. Leger-Enreille, F. Bridon, T. Hahn, I. Van Praagh Doreau, A. Travade, M. Gironde, O. Bézy, J. Lecadet, M.P. Vasson, S. Jouvency, S. Cardinaud, C.F. Roques, Y.-J. Bignon. Long term improved quality of life by a 2-week group physical and educational intervention shortly after breast cancer chemotherapy completion. Results of the 'Programme of Accompanying women after breast Cancer treatment completion in Thermal resorts' (PACThe) randomised clinical trial of 251 patients. European Journal of Cancer, Volume 49, Issue 7. May 2013, Pages 1530-1538.

[190] Marc M. Cohen, MBBS(Hons), PhD, Fiona Elliott, MWell, Liza Oates, PhD, Adrian Schembri, DPsych, and Nitin Mantri, PhD. Do Wellness Tourists Get Well? An Observational Study of Multiple Dimensions of Health and Well-Being After a Week-Long Retreat. J Altern Complement Med. 2017 Feb 1; 23(2): 140–148. Published online 2017 Feb 1. doi: 10.1089/acm.2016.0268.

[191] World Retreat Initiative: https://www.globalwellnessinstitute.org/world-retreat-study

Significant benefits were reported for back pain, arthritis, stress/anxiety, depression and insomnia[192].

Japan due to its location on the Pacific Ring of Fire has a landscape featuring geothermal pools and the Japanese culture has adapted these into the communal bathing centres known as *onsen*[193]. Japanese research has examined the reasons why health and anti-aging benefits are experienced by regular onsen users. For this they looked to the effect of thermal bathing on the production of heat shock proteins (HSPs), a family of proteins that are produced by cells in response to exposure to stressful conditions.

HSPs are known to repair stress-induced misfolded proteins, thus protecting the body from the damaging effects of stress. One HSP, HSP70 (70 kDa) is especially well known for being induced by heat stress and has the important physiological function of protection from stress as well as an immune enhancing effect and a molecular chaperone action (folding of proteins). The study found that Onsen bathing for 10-20 minutes at 40-42 degrees Celsius followed by keeping warm for a subsequent 15 minutes resulted in a significant increase in HSP70. Questionnaire data showed that health, tiredness and muscular pain were reduced, unsettled emotional confusion were reduced and the respondents reported general improvement mentally and physically. The researchers note: "It seems that the hot-spring hopping is the most reasonable ecological way to keep fit as the healthy method in the old age".

The Kuopio Ischaemic Heart Disease project in Finland examined 2315 men aged 42-60 years over a five and a half year period and found that increased frequency of sauna bathing is associated with a reduced risk of sudden cardiac death (SCD), fatal coronary heart disease (CHD), fatal cardiovascular disease (CVD) and all-cause mortality[194].

The same group found that moderate to high frequency of sauna bathing was associated with lowered risks of dementia and Alzheimer's disease[195].
Another Eastern traditional wellness program that has gained global popularity is India's classical system of healthcare, Ayurveda. A California wellness program based around Ayurvedic panchakarma modalities was evaluated for its health benefits. The study reported significant and sustained increases in both physical and mental wellbeing, including spirituality, gratitude and self-compassion[196]. The same team

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[192] James Clark-Kennedy, Marc Cohen. Indulgence or therapy? Exploring the characteristics, motivations and experiences of hot springs bathers in Victoria, Australia. Asia Pacific Journal of Tourism Research. 2017. Volume 22, Issue 5.

[193] Mihaela Serbulea, Unnikrishnan Payyappallimana. Onsen (hot springs) in Japan—Transforming terrain into healing landscapes. Health & Place Volume 18, Issue 6, November 2012, Pages 1366-1373.

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conducted research to identify altered metabolomic profiles following this Ayurveda-based intervention. The techniques of metabolomic profiling provide a better understanding of the diversity of metabolic risk among obese and lean individuals.

Highly significant reductions in 12 phosphatidylcholines and significant changes in an additional 57 metabolites classified as amino acids, biogenic amines, acylcarnitines, glycerophospholipids and sphingolipids were observed in the Ayurveda compared to the control group. These findings suggest new directions of research into Ayurvedic approaches to reducing risk factors for metabolic disorders such as obesity, diabetes, heart disease etc. The research team report that this is the first study to examine the effect of a Panchakarma-based Ayurvedic intervention on plasma metabolites in a controlled clinical trial.

Another research study on this same program examined the changes in 20,000 genes to determine which types of genes were changing before and after the wellness retreat experience. Study results showed that all groups -- novice meditators, experienced meditators, and vacationers -- had significant changes in molecular network patterns after the week at the wellness resort, with a clear signature distinguishing baseline from post-vacation biology. The most notable changes in gene activity were related to stress response and immune function.

With regard to mental wellness, the researchers assessed self-reported measures of wellbeing. While all groups showed improvements up to one month later, novice meditators had fewer symptoms of depression and less stress much longer than the non-meditating vacationers[197]. ‘‘Based on our results, the benefit we experience from meditation isn't strictly psychological; there is a clear and quantifiable change in how our bodies function," said Rudolph Tanzi, PhD, the Joseph P. and Rose F. Kennedy Professor of Neurology at Harvard University, and Director of the Genetics and Aging Research Unit at Massachusetts General Hospital. "Meditation is one of the ways to engage in restorative activities that may provide relief for our immune systems, easing the day-to-day stress of a body constantly trying to protect itself. The prediction is that this would then lead to healthier aging[198]".

Positive Psychology

Noting that the spa industry markets itself as offering holistic wellness through a variety of services intended to enhance wellbeing across body, mind and spirit, Jeremy McCarthy, Group Director of Spa & Wellness, Mandarin Oriental Hotel Group, Hong Kong, and Chair of the GWI’s Digital Wellness Initiative, authored the book ‘The Psychology of Spas and Wellbeing’. The purpose of the book is to explore the science behind the claims of the spa industry and look for possible applications to enhance the impact of a spa as a center for holistic healing.

First to understand the context from which this work arises, it is important to look a little into positive psychology. The emergence of positive psychology has marked a major shift - a paradigm change – from the classical systems of psychology which focus on illness, problems, conflicts and disorders. Instead of focusing on weaknesses

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or what is wrong—the deficit model—by focusing on strengths, positive psychology builds on what people do well and can do better.

Influenced by, among others, the work of management guru, Peter Drucker, who urged organisations to identify and deploy strengths productively if they want to achieve results, positive psychology has found wide application in organisational contexts, with standardised tools and curricula being developed to shift corporate cultures to a strength-supporting focus.

The focus of positive psychology is on helping people to develop their strengths, teaching how to use gratitude, and learning to become more optimistic.

Drawing on research from positive psychology as well as on evidence on what makes for effective stress management and reduction, Jeremy McCarthy's book offers pathways for how to approach human wellbeing holistically, considering body, mind and spirit and the interactions between these domains[199].

The Road to Mental Wellness for the Spa and Wellness Industry

As evidence grows for the physical and mental health benefits of spa and wellness programs, investment and policy development will inevitably follow. The following section of this White Paper is from spa and corporate health and wellness industry experts who call for renewed attention to appropriate standards for practice and policy pertaining to mental wellness of both the client and the employees of wellness centers and spas. For employees, mental wellness is viewed as central to workplace wellness.

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MENTAL WELLNESS: A FRAMEWORK FOR SPA, HOSPITALITY AND WORKSITE WELLNESS PROFESSIONALS

Beata Aleksandrowicz, Nancy Board, Bryan Hoare, Fikry Isaac MD,
Vivienne O'Keeffe, Robert Ranzi and Vanessa Stoessel

"There is no health without mental health."

The information presented in Part Two of this White Paper relates primarily to employee and guest mental wellbeing and the prevalence or lack thereof in the spa and hospitality industries. Comparisons can also be made to other workplace wellness programs that incorporate mental wellness initiatives and offer employees support for their mental wellbeing.

For the purpose of this position paper, mental wellbeing is defined as follows:
A mental state where one achieves a sense of fulfillment and lives a mindful, positive, happy and healthy life in which one contributes purposefully to societal development and community. It is not a fixed state, but an ever-evolving state that one progresses towards throughout their life cycle.

OBJECTIVE

The objective of this section of the paper is to:

1. Gather information, evidence and feedback on the conditions regarding employee and guest wellbeing within the Wellness Industry.
2. Create a case for implementing mental wellbeing services in hotel spa, resorts, and wellness center offerings and to better understand the industry's current readiness to support this.
3. Provide valuable input for creating the conditions for maximum mental wellbeing of the employees and practitioners who directly impact the guest wellness experience.

This may be achieved through the following methods:

- Assess whether mental wellbeing is currently integrated as an important aspect of wellness center, spa, hospitality and workplace wellness offerings in hospitality and other establishments ranging from independent spa and wellness centers to five star hotels
- Determine the current and relevant knowledge of spa and wellness practitioners / therapists in terms of supporting a guest on their journey to achieving mental wellbeing
- Gather industry assessments of how important mental wellness is to their clients and how they project the growth of this demand in the immediate and medium- term future.
- Assess industry understanding and support of employee training and self-care practices that promote worker resilience and thriving
- Assess alignment of management and therapist vision for wellbeing therapies from a business perspective

By gathering this information it will be possible to ascertain to what degree the need exists to deliver therapist and management programs that provide formal education on the methods for enhancing mental wellbeing. Additionally, we aim to assess the extent to which management support exists for maximizing employees'/therapists'/practitioners' own mental and emotional wellbeing. From that

standpoint, further research can be conducted on the type of content required for such a curriculum, in which kind of format this can be delivered, and by whom.

INTRODUCTION

The World Health Organization states that "globally, more than 300 million people of all ages suffer from depression." This number is rising, and "although there are known, effective treatments for depression, fewer than half of those affected in the world (in many countries, fewer than 10%) receive such treatments. Depression and anxiety are the leading cause of disability around the world. Barriers to effective care include a lack of resources, lack of trained health-care providers, and social stigma associated with mental disorders." (WHO, 2017)

Additionally, conditions such as loneliness and stress can be every bit as debilitating and widespread. According to the American Psychological Association, loneliness and social isolation may represent a greater public health hazard than obesity, and their impact has been growing and will continue to grow, according to research. And numerous studies cite the dangers of stress to our health & overall wellbeing.

On the flip side of these statistics, The Global Wellness Institute states that "World travelers made 691 million wellness trips in 2015, 104.4 million more than in 2013". (Global Wellness Economy Monitor, 2017). This indicates that year on year there exists a larger amount of people who are incorporating wellness and spa experiences into their holidays/travel. Similarly, "The global spa market grew from $94 billion in 2013 to $98.6 billion in 2015." (Global Wellness Economy Monitor, 2017).

When observing the statistics about worldwide depression, stress, and loneliness, the facts indicate a greater expenditure on spa experiences and wellness holidays/retreats. It becomes increasingly important for the spa and wellness industry/owners as well as therapists and practitioners to recognize the responsibility they have in supporting individuals on the road to a better and more optimal state of mental wellbeing. It also indicates that in order to support someone on a journey to improving mental wellbeing, trained health-care providers are key. But perhaps most importantly, is the role of the employer to provide a positive and purposeful work environment, a healthy workplace culture and is committed to healthy mental wellbeing for its entire staff. We strongly believe that the practitioners themselves – who touch, interact with and deliver services to guests – need to be holistically cared for by their employers. In order to deliver sound mind and body treatments, one must be of sound mind and body themselves.

The evidence is clear that organizations that truly care for their employees overall mental health & wellbeing will be the future industry leaders. In our ever-complicated, fast changing world, mental wellness needs to be a key component of any comprehensive wellness solution.

A CHANGING LANDSCAPE

Trend reports indicate that consumers are moving towards lifestyles that not only support the prevention of illness, but also encourage a healthy body and mind throughout life. Travelers today have higher expectations of what a spa and wellness experience will offer them.

Millennials arguably have greater expectations of their employers' responsibility to care for their overall mental health & wellbeing at work. For spa experiences, millenials are looking for authentic, unique and compelling experiences that match their own tribal culture, values and authenticity. Integrity is very important to them.

Some hotels, resorts and spas have responded to this trend by developing more customization and personal connection with an emphasis on mindfulness, which has grown in line with the holistic pursuit of stress management. Some of the more advanced workplaces also understand the benefits of these services for promoting an engaged and healthy workforce. It is not at all unusual for workplaces today to offer team supported physical activity challenges to get their employees to move more; offer nutrition seminars onsite and provide healthier cafeteria options. In-house massage chairs, qi-gong and tai chi classes at lunchtime are also becoming standard offerings for the enlightened workplaces. The benefits of mental wellness through meditation & mindfulness practice are becoming increasingly more known and popular worldwide.

With rising levels of stress worldwide, the Spa-Wellness industry is well positioned to be a driver and at the forefront of a stress-relief culture. However, without investment in self-care, training, and education, the therapists, who are the 'touch points' of healing, can become unwell themselves resulting in break downs, burnout and absenteeism. Without caregivers being in resourceful states themselves, their own capacities to deliver excellent quality services could be greatly compromised.

Although esthetics can play greatly into the guest experience, what guests take away at the end of the day is the human experience. It will be the *quality* of their interaction with the therapist, which will bring them back again…or not.

From that perspective, the wellness industry does need to make sure that therapists are in resourceful states to be given everything they need to fulfill their guests' needs and provide them with the highest quality treatments.

PRACTICE CONDITIONS

In order to best support a guest on their unique, holistic wellbeing journey, wellness centers, hotels and spas will require trained and certified professionals to be part of their core staff. These certifications can be in various fields from therapeutic bodywork to energy healing and spiritual coaching, or even fitness programs designed to enhance mental wellbeing, but ideally are a baseline for ensuring that a guest is in safe and capable hands.

With such requirements in terms of practitioner skill sets, and to adapt quickly to changing consumer needs, it is clear that many wellness centers, hotels, resorts and spas will be or already are entering into this arena without properly trained professionals on board. Thus it is becoming more important than ever to shed light on the wellness business's readiness to incorporate holistic care practices into their offering that specifically enables mental wellbeing. In addition, as with any credible workplace wellness initiative, incorporating 'care practices' for those practitioners/providers who are caring directly for the guests, should be an integral part of this new paradigm of mental wellness.

The essence of Spa-Wellness success is leadership - to serve the staff as in the concept of *servant leadership* - coined and written about by Roger Greenleaf. Servant leadership is a philosophy and set of practices that enriches the lives of individuals, builds better organizations and ultimately creates a more just and caring world.

If the organizational culture is solely based on profit, this may result in making staff work overtime, not providing adequate breaks, which will diminish the "caring

experience" provided for the guest. The customer will evaluate the organization and their experience by how they feel and their interactions with the Wellness team.

Whatever the challenge of operations, the leader of a team can protect and serve their team through difficult times; they can stand-up for their rights, and create a space where people feel cared for and supported. This in turn builds trust, loyalty and provides a supportive space for everyone to work. This can be achieved by regularly involving team members in solving problems and providing them with autonomy to do the right thing. This way staff feel a valued part of the team and invested in resolving problems and increasing guest satisfaction.

SKILLS, KNOWLEDGE AND CAPABILITIES

Therapist skill set variances exist because there is no global authorizing organization that states the standards required of a wellness center or spa therapist being hired. Rather this is stipulated country by country and in emerging economies this is often not formalized or regulated. As a result, less experienced staff can be expected to serve a longer workday, deliver more treatments and have less attention paid to their mental and emotional wellbeing. It is important to consider the impact of a therapist who has been on their feet all day with few breaks between sessions, and are stressed about care their own giving concerns with small children and elderly parents that they may be experiencing in their own lives. In addition, consider this same employee as she struggles with a poor diet, lack of sleep, experiencing continuous financial concerns and has no time left for exercise or meditation. If we place ourselves in the guest role and imagine that she is our own therapist, working on our body, doing her very best, but in the guest experience, understandably falling short.

Due to the variance in therapist training programs, there is little consistency in terms of what qualifications a therapist may have when recruited, particularly within the luxury hotel environment. Some may have gone through rigorous training qualifications, for example from an organization such as CIBTAC or CIDESCO, and have thus been internationally certified. Some may have received basic training from a local therapy school and then learned more on the job through their career, which means their experience has been improved working with luxury / 5 star establishments. Some may have been hired directly from the local community without any relevant wellness center or spa experience and then trained on the job. Either way specialized training and genuine caring for these practitioners/therapists received by their employer is a worthy goal.

Commonly, if hired with previous experience and qualifications, a full-time wellness and spa practitioner/therapist in a luxury hotel, resort or spa environment will be on brought on with the following knowledge:

- brand knowledge
- company culture
- treatment protocol training
- basic anatomy and physiology
- benefits of treatments
- contra-indications for treatments
- product knowledge

On the job, therapists may acquire additional skills and knowledge such as:

- retail sales training
- up-selling training

- guest service journey
- customer service and service recovery

Hotel and new spa projects are rapidly increasing in emerging economies where there is a requirement to hire locally, yet the majority of therapists have little or no relevant experience. Successful spas want to attract highly trained workers who embrace the wellness lifestyle that supports their professional positions. Hotel and wellness center management must ensure the team is trained appropriately and is well cared for. But is this happening worldwide? How does a guest know for sure what training and support their therapist receives? How would a guest know whether that practitioner working on their body is carrying a great burden of stress and/or suffering with depression themselves? How can they be sure that this practitioner is living in an optimal state of wellbeing? A savvy consumer can pick on fatigue and stress conveyed from a therapist, which can negatively impact their experience.

Besides varying degrees of mental wellness for practitioners and staff within the industry, a variety of diverse skill sets are common. Depending on their choice of facility, the wellness team may have some therapists with holistic certifications or deep knowledge and experience that allow them to guide guests towards improved mental wellness, while others who have limited knowledge and experience and only able to deliver treatment protocols for muscle tension relief or pampering purposes. Yet many of these staff may be younger, work longer hours, have less experience, receive less pay and struggle with work/life balance.

If staff are not well cared for by their employer, it can lead to burnout, disillusionment, resentment, anger, martyr-ism or a victim mentality. This contributes negatively to the mental, spiritual and physical wellbeing of the individual, which negatively affects guests during treatments. Today's savvy and intuitive wellness consumer can pick up on negative moods and innuendos of therapists who are being used rather than supported.

Mental wellness requires skills, knowledge, training and self-care practice. In order to ensure that therapists deliver an excellent experience for patients or guests, and one that supports an enhanced state of mental wellbeing, the industry would benefit from the development and implementation of a standard framework that covers relevant topics and provides a formal certification. Additionally, it is critical that all certificate and training programs incorporate a genuine 'caring for the caregiver' curriculum and philosophy, one that is shared by the leadership of the organization and delivered to every manager and employee/contractor alike.

Employers of choice offer holistic wellness offerings for their employees, including both physical and emotional aspects of wellbeing. Without employer support and genuine caring, employees will continue to experience burnout, increased stress and depression.

The Benefits of a Culture of Health - Good for Workers, Good for Business

The wellness industry needs to equip therapists with the skill sets required to enhance a guest's wellbeing and mental state. But paramount to this is having a workplace culture that supports their overall wellbeing. By creating both, we can achieve the following:

- Improve the employee experience so they can deliver a more beneficial experience for their guest

- Improve the guest's experience and therefore increase the likelihood for return and/or referrals
- Attract and retain individuals who are passionate about mental wellness as employees and practitioners, which in turn will raise awareness of the Wellness industry to be recognized as a viable provider of mental wellness, preventative health and overall wellbeing sound practices

Supporting mental wellness is good for business. By improving the guest experience and by creating a healthier bond between therapist and guest, better business outcomes and a greater competitive advantage can be achieved, such as:

- Greater revenues with higher priced treatments with more qualified therapists
- Likelihood to purchase more treatments per stay
- Larger amount of repeat / returning guests
- Higher patient or guest satisfaction scores/positive reviews
- Happier, healthier and more fulfilled employees

Not addressing mental wellness impacts the bottom line: lost earnings, reduced productivity, increased insurance costs, increased absences and presenteeism. Leaders must talk openly about the importance of mental wellbeing, create real cultures of caring, and demonstrate their commitment to workplace health and wellness. The workplace environment needs to foster healthy behaviors and lifestyles and healthy choices. Employers need to help employees find balance in body, mind and spirit - igniting their full engagement at work - so they can leave and return to their families and communities in a better state of mind, more resilient and more energized.

Workplace wellbeing requires an integrated holistic approach covering physical, mental, emotional and spiritual needs (both in preventive and interventive ways). When employees feel supported by their employers they can then better support guests to embrace similar wellness practices.

Great value would additionally be garnered for the industry should businesses adopt the following key elements and criteria in their practices:

- Integrating aggregated, trend-level data for building a business case for focusing on mental wellbeing
- Providing dedicated staff that understand the importance of mental wellbeing and ensure practitioners own wellbeing is attended to as a top priority
- Recruiting leaders to talk openly about mental wellbeing and make available employee support services
- Offering a variety of mental wellbeing service options in different formats in order to meet people where they are (e.g. phone, online, adding mental wellbeing components to other programs such as fitness or chronic condition management)
- Using technology as well as understanding its pros and cons; "There's an app for that" is a commonplace statement in today's high-tech world, but most technologies are not fully studied in terms of their impact, telemedicine/telepsychiatry and/or counseling
- Providing the tools and professional support to help employees as well as creating an environment that fosters and supports healthy choices
- Encouraging employees to actively invest in their own health and wellbeing to achieve their personal best

- Helping therapists achieve balance in body, mind and spirit thus igniting full engagement and purpose at work, at home and in their communities.

EMPLOYER / EMPLOYEE SURVEY

As we assess the current and future mental wellness practices in the wellness industry, we are proposing this be done on multiple levels and include several steps.

Step One:
Validate the current integration of mental wellbeing practices offered to patient/guest and to employees through an online survey to be completed by practitioners and hospitality or wellness center management across multiple regions.

We recommend the survey include questions which cover the following topics:

- For management-
    - general establishment information
    - organizational philosophy & therapy delivery
    - Workplace wellness philosophy
    - Existing or future wellness offerings that support employee health and wellbeing
    - training and employee knowledge/development

- For practitioners-
    - demographics and general information
    - job philosophy and therapy delivery
    - current state of stress and mental wellbeing on the job
    - training and personal knowledge/development

Use of multiple choice and Likert scale style questions allows for easier consolidation and analysis of data.

Proposed survey structures can be found in the Appendix, page 127.

Step Two:
- Assess current workplace support services that demonstrate employer 'caring for the carers' approach
- Assess or develop educational curriculum for therapists in the form of training programs that focus on holistic practices encouraging mental wellbeing, both for self-care and for guests.

Step Three:
- Build a series of practical applications for practitioners ongoing learning
- Develop management training around the importance of worker wellbeing and as needed, provide expert referrals for developing comprehensive workplace wellness programs
- Provide at minimum, education & training for senior management about the importance of 'caring for the carers'

LOOKING FORWARD
Currently, the approaches, resources and programs that are utilized to support the mental and emotional wellbeing of guests varies widely. And we have no body of knowledge that has determined to what extent workplace wellness programs and employee support is currently provided in this sector. In order for the Wellness center, spa and hospitality industry and its professionals to effectively respond to changing

consumer preferences and expectations, a framework that offers guidelines around implementation and management of holistic programs would be of benefit.

The future of the wellness business will belong to those organizations whose leaders have a deep understanding of the transformative power of congruent wellness principles for all stakeholders as a basis for delivering truly meaningful and therapeutic experiences for all involved. For many organizations, this will require a paradigm shift in philosophy from the top down, such as committing to a servant leadership practice that enriches the lives of individuals, builds better organizations and ultimately creates a more just and caring world. Offering mental wellness services would require more specialized staff with proper mental health training, and will need access to mental health medical providers in the event that guests need to be referred on to specialists. Spas can play a larger role in supporting the medical community and supplementing clinical care – and an even a bigger role in reducing stress and enhancing mental wellbeing. Mental wellness will be a necessity as we move into the future. Living well will require a major shift in our healthcare – as well as our well-care ecosystem.

The informed wellness consumer of the future will not choose a wellness facility that is not grounded in integrity. Mentally healthy leaders and team members will be a basic requirement, as the informed wellness consumer will detect disingenuous organizations not practicing a culture of therapeutic congruency. While the spa industry is constantly challenging and evolving, industry experts agree that the values around service, engagement and consistency continue to underpin the industry.

What is especially important is that anyone providing services to others, no matter what industry or demographic, be equipped with the knowledge, education, experience and fundamentals of what it means to *live a well life*. As we have learned from the findings of Dr. Lawrence Choy's work on neuroplasticity and the effect of this on brain functioning (see earlier section of this White Paper, every practitioner, provider, and care-giver should be made aware of this information and be supported by their employers to actively achieve a state of mental wellness. Stress reduction, mindfulness training, sleep, exercise, nutrition, meditation, rest – all of these components are necessary to achieve a balanced life. For a therapist to authentically inspire a guest, they themselves must be well. It is incumbent on leadership to do more, to educate and to inspire employees through their own actions of self-care and self-responsibility.

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- https://www.globalwellnessinstitute.org/wellness-at-work-initiative-resources
- http://www.spatraining.global
  http://spaprofits.com

A CARING WORKPLACE CULTURE
CASE STUDIES OF ORGANIZATIONS SUPPORTING WORKER MENTAL WELLBEING

By Nancy Board, MSW

Nancy Board, Executive Operations Director, Global Women 4 Wellbeing www.gw4w.org has dedicated over two decades to improving the health & emotional wellbeing of employees in all industries, and across the globe. She shares case studies conducted of two organizations that have contributed substantial resources to improving the wellbeing of their workforces. Presented are The Breakers (a luxury hotel and spa located in Palm Beach, Florida) and Eileen Fisher (a conscious and transparent retailer of women's clothing, based in New York) as examples of two organizations that demonstrate genuine "caring for the carers," resulting in increased revenue and profits.

1. THE BREAKERS, PALM BEACH, FLORIDA

Denise Bober is an executive who has a passion for two disciplines – Human Resources and the Hotel Business. During her 30-year tenure at The Breakers, Palm Beach, she and her leadership team have created a nurturing environment where staff can thrive, grow and develop, which reflects The Breakers employee-centered philosophy. She was recently part of panel discussion speaking on Cultures of Health and successful workplaces where female leadership has made a measurable positive impact. The Breakers philosophy is, "team satisfaction drives customer satisfaction, which leads to financial success."

As vice president of human resources, her peers recognize Bober as an intuitive advocate for a fulfilled workforce of more than 2,000 members across dozens of operating and administrative departments. The successful launch of Corporate Athlete, one of The Breakers' signature executive training programs for management, is also a testament to Bober's relentless passion for business success based on employee wellness: This intensive, three-day program provides staff with the tools to manage their energy and time so as to become fully engaged in all areas of their professional and personal lives.

The Breakers has an 82% employee retention rate. Bober feels this is due to collaboration with employees, which creates a sense of belonging. "We look at wellness as a value add…not in terms of ROI, which has brought our healthcare spend down. Our culture of care and wellbeing inspires our team members to live a fulfilled life. In turn, their collaborative success makes us a high-performing organization."

The Breakers is a family-owned resort, which makes major investments to empower its staff with the tools and resources to enrich their lives with healthy-living practices and work/life integration.

Further information can be found on these sites:
http://www.corporatewellnessmagazine.com/others/the-breakers-palm-beach-case-study/ https://issuu.com/thebreakerspalmbeach/docs/sir_report_2016?e=24726257/42542228

Social Impact Report:
https://issuu.com/thebreakerspalmbeach/docs/sir_socialimpactreport_2017?e=24726257/56980812

[The Breakers Palm Beach Case Study - The Business of ...]

www.corporatewellnessmagazine.com

For The Breakers Palm Beach, the wellbeing and fulfillment of its 2,000 team members are top priority. This independent, family-owned resort makes an unprecedented ...

2. EILEEN FISHER, NEW YORK, NY: *1200 employees and retail stores in Canada, the UK & USA*

Eileen Fisher is known to many as a quiet, very humble, unassuming woman who often credits others for her success. She is well received at speaking events, mostly because "she just comes from the heart."

Leslie Ritter, Wellness Leader @ Eileen Fisher (EF) is a trained Massage therapist and professional singer who was recruited to Wellness through her massage practice. In the role now for 10 years EF has expanded from the more traditional wellness offerings, such as yoga classes, meditation and massage to include out of the box ideas such as subsidizing programs and supplies that are unique to each individual employees health & wellbeing journey, be that proper footwear for associates that stand all day or an air purification system for home air quality.

"We bring in acupuncturists, cranio-sacral therapists, an astrologist, massage therapists, yoga instructors, a medical intuitive, and even a life-path work specialist for spiritual development," says Ritter.

In 2016, Ritter was part of a team that designed a 9-module growth and development program involving skills with deeper personal and professional transformation work to help staff find and develop not just a professional development plan but to finding a clear purpose for their life. "We believe that when people align their own purpose with the company purpose they give their best and are more fulfilled in their work. If you are not in the right role or find that you are not a right fit here at the company, we coach employees to become clear and support them to move on if that is best for them. We want people to work here who resonate with what we are doing and who are giving their best selves to the work."

Ritter is part of a nine-member team that creates and facilitates this effort. She is becoming a certified coach as a result. "We have really strong values about individual growth and wellbeing here. We want to expand our internal coaching capabilities and offer coaching support in order to help employees stay focused on their individual development plans. Our philosophy goes beyond getting a massage, losing weight or stopping smoking; it's about expanding self-awareness, confidence and social consciousness for the benefit of all.

So does all of this impact the bottom line? According to Ritter, "Retention numbers have always been great here; much stronger than the norm for the Retail business. People stay here, I believe, because we stand for a lot more than making and selling clothing. Why wouldn't you want to be part of this brand?"

INCENTIVIZING WELLNESS

Gerard Bodeker

In the world of wellness business, a raft of new strategies has emerged for rewarding those who are regular in activity and wellness programs. According to a study published in the Annals of Internal Medicine it has been reported that more than 80% of large employers in the Unite States are now using some form of financial incentive to increase physical activity. The question is: what works best?

A randomised controlled trial was designed to test the effectiveness of three methods to frame financial incentives to increase physical activity among overweight and obese adults.

Participants had a goal of 7000 steps per day and were randomly assigned to a control group with daily feedback or 1 of 3 financial incentive programs with daily feedback:

(i) a gain incentive ($1.40 given each day the goal was achieved),
(ii) lottery incentive (daily eligibility [expected value approximately $1.40] if goal was achieved), or
(iii) loss incentive ($42 allocated monthly upfront and $1.40 removed each day the goal was not achieved). Participants were followed for another 13 weeks with daily performance feedback but no incentives.

This study found that financial incentives framed as a loss were most effective for achieving physical activity goals[200].

Other approaches have used virtual currency as a reward system that then offers arrange of gaming options based on the level of the rewards. Meretz is an innovative platform developed to motivate users to lead healthier lives by being more active throughout the day. Users can link up their workout data from fitness apps like MapMyRun or Fitbit and Meretz will convert their activity into currency. The points can be used to buy in-game currency, power-ups and bonus offerings for various mobile, console and PC games.

Developed to reward balanced living, the app counts users' steps, heartbeats, calories and minutes and transforms their activity into a virtual currency. The currency, known as Meretz Points, can then be used in various games or to unlock valuable rewards. By staying active, users earn daily rewards, which are deposited into their Meretz account. The app was developed to combat inactivity and obesity, as well as to transform the image of video games as a factor that contributes to sedentary lifestyles, childhood obesity, and various health problems associated with these. Earning virtual currency with real in-game value compels users to keep playing the games and to stay active to earn points. Users put a high value on the points and treat them as real currency because they are earned.

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[200] Mitesh S. Patel; David A. Asch; Roy Rosin; Dylan S. Small; Scarlett L. Bellamy; Jack Heuer; Susan Sproat; Chris Hyson; Nancy Haff; Samantha M. Lee; Lisa Wesby; Karen Hoffer; David Shuttleworth; Devon H. Taylor; Victoria Hilbert; Jingsan Zhu; Lin Yang; Xingmei Wang; Kevin G. Volpp. Framing Financial Incentives to Increase Physical Activity Among Overweight and Obese Adults: A Randomized, Controlled Trial. Ann Intern Med. 2016;164(6):385-394. DOI: 10.7326/M15-1635

In the world of health insurance, a program offered by Generali Vitali Insurance rewards members for healthy lifestyle choices. The company combines actuarial, behavioural and clinical tools in a step-by-step programme that helps members improve their health through wellness activities and healthy lifestyle choices. Members receive rewards for getting healthier, which ultimately has a positive impact on the prevalence of mortality and morbidity experience in the insurance business and in society. Based on a health status assessment, a wellness program and adherence to this, members then are given access to a range of travel, lifestyle and other rewards (https://www.generalivitality.com/)

And increasingly, there is an emergence of personalized wellbeing software to drive healthy behaviors. For example, one service, HiMOTIV, offers to:

- Set up fun and healthy workplace challenge competitions step challenges, nutrition challenges, mental health challenges, and more…
- Reward healthy behaviours
- Works with a wide range of trackers like Fitbit and Strava Develop online communities where colleagues can connect Monitor progress with tools and analytics
- Integrates easily with a company's current wellbeing initiatives

(https://www.himotiv.com/)

In Austria, a program has been created which rewards those participating in exercise and related wellness programs by making donation to their preferred charities. Linking physical and mental health with social engagement, the program MOVEEFFECT, a mobile app based social network, has the following aims:

- Increase the activity and movement of the working population
- Strengthen psychosocial health of people
- Encourage exercise and sport in children and adolescents
- Increase social commitment of the population and companies

(https://www.moveeffect.com/?lang=en)

Austrian psychologists, Roman Heinzle and Robert Ranzi, report that the initial concept of MOVEEFFECT was created based on a man who decided to bike from Vorarlberg to Vienna, from the most Western federal state of Austria to the other end of the country, a distance of around 600km, in order to raise money and donate it to a charity organization in Austria.

The idea in creating MOVEEFFECT was that people might be more motivated to exercise and improve their physical and mental health when they experience a clear linkage to social engagement activities. Not only would they benefit directly in terms of health outcomes, but their personal exercise routine would engage them with others and would support their favorite charitable causes. Golf, ice skating, skiing, walking the dog, gardening, attending yoga and pilates are all eligible wellness pursuits under the MOVEEFFECT program.

The main motive with MOVEEFFECT is social commitment. Points are collected for a good cause, which the organizations can then convert into donations. Using the concept of bonus Smiles, as a reiteration of airline companies' bonus Miles, a certain amount of exercise, yoga or meditation practice can earn a certain number of Smiles. These are then linked to a matched amount of donation to the preferred charity of the participant. Some support for this is received from local government, but no sponsorship has been received from corporate or federal government sources.

Recognizing the value of social support in sustaining physical and mental well-being, MOVEEFFECT offers a blog for all kinds of health issues, especially those concerned with mental programs, in order to support the improvement of mental fitness.

Roman Heinzle and his co-worker, Robert Ranzi (a member of the Global Wellness Institute's Mental Wellness Initiative and a contributor to this White Paper) report that evaluations have shown the program to be successful, stating that:

- 93% of all the users feel better physically (fitter, they experience less pain and feel healthier), and
- 88% of the users feel better mentally (they are balanced, more motivated and productive).

Large corporate partners include IBM, SPAR, Liebherr, and others.

Incentivizing wellness activities and choices is clearly a major business direction within the wellness industry and is likely to be a strong influence in wellness policy in the future. At the same time, research is tracking which incentive strategies appear to work best with different categories of health and wellness consumers. Where money meets motivation, and innovation meets inspiration, new pathways to wellness show signs of continuing evolution.

ETHICS AND MENTAL WELLNESS

Gerard Bodeker

Psychological safety, protection, and wellbeing in the workplace are essential underpinnings for effective contributions by workers everywhere.

In the wellness industry, this is especially so and the growing industry-wide awareness of these issues highlights the need for ethical values and standards to be articulated and agreed across the sector.

A wake up call was issued by Spa Business Editor, Liz Terry in late 2017 when she called out the trend in some parts of the world of a form of bonded labour in spa and wellness settings. The core issues were summed up in the title of Ms. Terry's editorial: *Modern Slavery*: http://www.spabusiness.com/detail.cfm?pagetype=featuresonline&featureid=32070&mag=Spa%20Business&linktype=story&source=none&ref=n

Wellness blogger, Trent Munday, a Senior Vice President with Steiner Leisure, received strong support from readers when, in November 2017, he highlighted sexual harassment in the spa industry: http://trentmunday.com/2017/11/14/sex-spa-industry/

And in January 2018, shares in Wynn Resorts Ltd fell 19 per cent in two days, a loss of market value approaching $4 billion resulting from multiple allegations against the Chairman of sexual impropriety in the spa. This underscored how, in the new climate of ethical awareness, a lapse in workplace standards can translate rapidly into a steep loss in the value of a company as investors and customers seek to distance themselves from the brand.

As with the case of USA Gymnastics and the criminal sexual malpractice by its team doctor, the need for protection, backup, psychological support and recourse to restorative justice lie at the heart of mental health. Such support must be underpinned by clear ethical standards and oversight throughout the wellness industry. Unless these environments care for their carers, how can staff be expected to give of their best to those they are caring for?

While clear ethical standards and guidelines will not be implemented overnight, the issue does require attention as it is on the public radar now. As happened in the early days of Corporate Social Responsibility (CSR) – now "de rigeur" in corporate structures - it will require initial conversations that then evolve to eventual policies and guidelines. These guidelines, central to well-informed and ethical enterprise, could be incorporated into CSR as well as HR policies. They are issues of supply chain and involve human capital – capital that every entity needs to protect.

Ethical issues also exist around the trend of bringing products and processes from traditional cultures into spa and wellness programs. This trend enters into the arena of cultural intellectual property rights, bringing with it the need for permission to use, the need for fair and equitable terms in benefit sharing, and the importance of authenticity in training and practice. A largely overlooked arena within the wellness industry, there is a need for ethical standards to protect the rights and sense of societal mental wellbeing of customary owners of traditional knowledge.

The need to respect intellectual property rights(IPR) of traditional societies over their medical knowledge is referred to in WHO's Traditional Medicine Strategy 2014–2023

(WHO, 2013), and is a legal requirement of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits, which entered into force on 12 October 2014. The Nagoya Protocol highlights: "the unique circumstances where traditional knowledge associated with genetic resources is held in countries, which may be oral, documented or in other forms, reflecting a rich cultural heritage relevant for conservation and sustainable use of biological diversity": https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf. The International Society of Ethnobiology (ISE) has produced helpful guidelines on access and benefit-sharing. Widely viewed as a gold standard, the ISE Guidelines give good broad principles as well as a set of questions for each stage of the R&D process: http://www.ethnobiology.net/what-we-do/core-programs/ise-ethics-program/code-of-ethics/.

Society is calling for a raised bar on ethical behaviour in the work place and is recognizing the mental health consequences of lax standards and enforcement. The wellness industry has the opportunity to play catch up and, indeed, to take a global lead according to its own best principles of creating mental wellbeing for all, showcasing the best in ethical and mental wellness practice for others to emulate.

CONCLUSION

千里之行，始於足下

"The journey of a thousand miles begins with a single step."
Lao Tzu (c.604 BCE)

The Mental Wellness Initiative of the Global Wellness Institute was formed in October 2016 with the mission "*to understand those pathways that help people stay well and thrive mentally as well as physically*."

The production of this White Paper has been a team effort, drawing on the shared experience of wellness specialists from across the spectrum – from physicians and medical researchers to wellness consultants and wellness program innovators.

The White Paper is offered from the Global Wellness Institute's Mental Wellness Initiative for those who seek paths towards living a well life. While this is for the wellness industry, even more so the vision here is to promote self-sufficiency in mental wellness journeys, identifying paths for people, horizons for humanity.

This is a first generation of exploration and will doubtless be followed by expanded, more granular and far-reaching landscapes of possibilities, as input is received from other Initiatives of the Global Wellness Institute and from the wellness community more widely. It is a work in progress.

Much remains to be done. For example, what is the role of the senses - linked so directly to our brains and emotions, as well as environment and reduction of stressors – in the experience of mental wellness? Historically we have accepted the view framed by Aristotle that we have just five senses. Yet modern science is now confident that we have at least nine senses and most researchers consider that there are more like twenty-one or so[201]. As our direct link between the world and our most immediate experience of it, the senses need to be understood if we are to understand the deepest pathways of mental wellness.

And from the beginning of human evolution, the arts have played a role in expressing the most important aspirations and visions of our species – just as we noted in the section on Dance. What pathways are there in the Arts that lead to mental wellness? And what does the evidence say about this?

What do traditional cultures offer wider humanity in terms of their knowledge of paths to mental wellness? We have already referenced modalities from India's Ayurveda and Chinese traditions of energy balancing such as Tai Chi, as well as dietary traditions that support an optimal balance in the gut-brain axis. Is there more? And how can these be harnessed to promote mental wellness at the local level rather than importing Western models to the 75% of the world's population that is not Western?

There are many more questions for the wellness industry itself. The questionnaires accompanying this White Paper will yield much of value to the industry. We encourage everyone in the Wellness center, spa and hospitality industry to complete

[201] Daven Hiskey. Humans have a lot more than five senses. 16 July 2010: http://www.todayifoundout.com/index.php/2010/07/humans-have-a-lot-more-than-five-senses/

these online surveys and to share them with your networks in order to create a large respondent base and get a valid view of mental wellness needs and directions from and for the wellness industry. This material can serve as the basis for new curriculum material for professional development, for new program ideas, and for the evaluation tools needed to assess the impact of our innovations in mental wellness.

In considering the centrality of mental wellness to living a well life, it is important to also recognize that there is much in the wider world to challenge the conditions for mental wellness.

Extreme weather conditions this year have displaced millions in Asia and the Americas. Earthquakes have added to this collective distress. Political events have resulted in the dislocation of millions in the Middle East, Africa, Europe and Asia. We see this on the news everyday and it impacts our own mental wellbeing.

It turns out that empathy is registered in a specific region of our brain - the anterior insular cortex – and we feel the pain of others as we view it live or in the media[202]. Our own biology of mental wellness is impacted. So, living a well life necessarily must take into account *living a well life in challenging times*. This will be one area in which the Mental Wellness focuses in the times ahead. Mental Wellness Initiative members Nancy Board and Gerry Bodeker have both in refugee and trauma events, and a mental wellness framework for such contexts does seem a need of our time.

The 2017 Nobel prizes in Medicine and in Physics take humanity's gaze beyond our planet, first to the solar system and then beyond to the far reaches of the Universe itself.

The 2017 Nobel Prize for Medicine has gone, as we have noted, to the group that identified the genetic basis for circadian rhythms. In so doing, they made clear that we are not just a planetary species, but a species of the solar system at least, with our most fundamental rhythms dictated by our relationship with the Sun.

And the discovery of gravitational waves, for which three physicists received the 2017 Nobel Prize in Physics, waves that were predicted in 1916, 101 years ago, by Einstein, has been possible by creating detection devices in different locations to pick up waves sent out across time and space billions of years ago. The gravitational waves impact these devices and thus we know that gravitational waves do exist. But if they impact the devices, do they not also impact everything else on Earth, including our own physiology? And to what effect? What other influences from collapsed planets and galaxies also find their way to Earth and impact life in subtle ways? This perspective surely locates our sphere of influence – or of being influenced - out in the wider Universe itself. And in turn, our frame of reference for who we are has to be re-imagined.

A Sanskrit expression states: *Yatha pinde tatha brahmande, yatha brahmande tatha pinde.* I.E. "As is the microcosm, so is the macrocosm. As is the macrocosm, so is the microcosm". What meditating seers perceived about the universality of laws of nature across time and space is now being borne out by discoveries in science. Our mental

1. [202] X. Gu, Z. Gao, X. Wang, X. Liu, R. T. Knight, P. R. Hof, J. Fan. Anterior insular cortex is necessary for empathetic pain perception. *Brain*, 2012; 135 (9): 2726 DOI: 10.1093/brain/aws199

wellness, it turns out, is linked not only to our brain health and our gut biota, but to the movements of the planets and most probably the movements of the Universe.

Mental wellness offers a window into the big picture of who we are as species, of our potential and of the pathways to actualize this. Exploring it will be a journey of a lifetime. It will be one of wonder and learning and transformation.

Wonder is the beginning of wisdom.
Socrates

BIODATA OF CONTRIBUTORS

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Founder, Pure Massage Spa Training Method®. United Kingdom

Beata Aleksandrowicz is the creator of the Pure Massage Spa Training Method® which provides spas worldwide with advanced training in a modern concept of massage. Beata has authored books on massage, translated into several languages and published worldwide. She is a former columnist for The Sunday Telegraph, Stella Magazine and lead author of the Massage Guide created by The Guardian Magazine. Beata's dedication is to change the perception of massage, believing that massage has to be personalised and go beyond pampering and beauty. Human experience in the spa industry is at the core of her interest and expertise.

Nancy Board, MSW, United States
Co-Founder, Global Women 4 Wellbeing

Nancy Board is widely experienced in corporate health and wellbeing globally and leading women's personal and professional development programs on four continents. She is an expert in workplace critical incident and trauma response, including natural disasters and episodes of homicide/suicide and has witnessed firsthand how these traumatic events impact individual and organizational mental wellbeing. Her experience includes helping organizations, their leaders and their employees build resiliency. Previously responsible for health and wellness initiatives in 15 countries for JP Morgan, Nancy is the co-founder of Global Women 4 Wellbeing. Its mission is to empower healthy female leaders by providing education, training and mentorship. GW4W is conducting innovative research on women's health and developing an inspiring global women's network. http://www.gw4w.org

Gerard Bodeker, PhD.
University of Oxford, UK & Columbia University, USA

Professor Gerry Bodeker, PhD, of the Dept. of Epidemiology, Columbia University, New York and Green Templeton College, University of Oxford, UK, is a public health academic and clinical psychologist, whose doctoral studies were at Harvard. For three decades he has researched and advised on integrative medicine and wellness. He serves on the editorial boards of several journals in this field and has produced six books, including serving as Editor-in-Chief for the two-volume *World Health Organization (WHO) Global Atlas on Traditional and Complementary Medicine* and the book *Understanding the Global Spa Industry*. He advises the private sector, governments and UN organizations on culturally themed wellness research and pathways. Gerry is a Trustee of Oxford Project Southeast Asia and a Fellow of the International Union of Pure and Applied Chemistry (IUPAC). He chairs the Mental Wellness Initiative of the Global Wellness Institute.

Margareth Brepohl, Brazil
Quality Development Director, Lapinha SPA

Margareth Brepohl has been Lapinha Spa's co-owner since 1978. Margareth has implemented quality control in the last 20 years, contributing towards Lapinha's benchmark position in Brazil and in Latin America. A clinical psychologist and family therapist, she also teaches university-level courses and leads wellbeing workshops for couples and families facing challenges and difficulties in different life stages. Her current focus is coordinating Lapinha's infrastructure and globalization projects.

Dr. Lawrence Choy, MD, United States
Co-Founder and Medical Director, Elite Focus Clinic

Lawrence Choy M.D. is a Stanford-trained psychiatrist and diplomate of the American Board of Psychiatry and Neurology, with than 10 years of clinical experience treating diverse patient populations. He is the co-founder and medical director of Elite Focus Clinic, a specialty clinic treating Adult ADHD and cognitive performance in Silicon Valley. Dr. Choy particularly specializes in clinical neuroscience and neuro-enhancement in helping his patients improve their overall wellbeing.

Dr. Daniel Friedland, MD, United States

Daniel Friedland is an expert on leadership, resiliency and cultivating wellness and wellbeing. He has served as the past chair of the Academy of Integrative Health and Medicine and Co-Chair of Conscious Capitalism, San Diego. He currently serves as the CEO of SuperSmartHealth, where he provides keynotes, coaching and wellness and executive leadership programs based on brain science and mindfulness that empower individuals and organizations to thrive. His most recently published book is titled *Leading Well from Within: A Neuroscience and Mindfulness-Based Framework for Conscious Leadership.* Further information and a free excerpt of the book is available at: http://supersmarthealth.com

Alina Hernandez, United States
Organizational Advisor, United States

Alina Hernandez collaborates with Dr. Sergio Pecorelli and Patricia Ladis of KIMA Wellness on a training program designed around the reframe of the First 1000 Days of Life. Her recent work with the Lorenzini Medical Foundation, specializing in primary prevention and translational medicine (New York City)) solidified Alina's commitment to evidence-based knowledge. Her work has included coaching, personal & organizational development; sponsorship and hospitality management for the Olympic Games and World Cup; and production of global meetings on health and wellness themes. Alina is a life-long student of Psychological

Stage Development theories, and an Integral Theory practitioner. She is a member of the Advisory Board of *Field*, Brain Spa optimization industry innovator. Alina serves as Vice-Chair of the Mental Wellness Initiative of the Global Wellness Institute.

Bryan Hoare, Hong Kong

Bryan Hoare is an award-winning wellness specialist. A double-masters graduate, he has held leadership roles in the hospitality and health-care industries across the globe for over 25 years. A desire to improve the lives of others leads his work today. Bryan was recently the a key advisor and multidisciplinary team member in a ground breaking sanctuary for wellness and the treatment of behavioral disorders in Qatar. He has joined Rosewood Hong Kong as the Director of Wellness, in their new wellness brand, Asaya, set to open in 2018.

Dr. Fikry W. Isaac, MD, MPH, FACOEM, United States

Fikry Isaac is Founder & Chief Executive Officer of WellWorld Consulting, offering strategic advisory, market research and board level support to public and private sector clients focused on global health and wellness strategies, policies and solutions. Dr. Isaac was most recently Vice President of Global Health Services for Johnson & Johnson, in New Brunswick, New Jersey. Dr. Isaac is a pioneer in the field of workplace health promotion and global health and is a published author in this field. He is a fellow of ACOEM, serves as an executive board member on the Health Enhancement Research Organization (HERO), Advisor to The Harvard School of Public Health SHINE Committee, and most recently as a board of trustee, Shore Memorial Health Systems. Dr. Isaac received many national and international awards and recognition for his work on Population Health Management. In 2016, he was the recipient of the Global Wellness Institute Award, "Leader in Workplace Wellness".

Vivienne O'Keeffe, Canada

A European-trained therapist and wellness spa development consultant, Vivienne creates and weaves wellness concepts into a congruent tapestry of structure for spa development and turnaround projects, ensuring all systems align with the original vision. She excels at creating authentic guest experiences within a sustainable, successful framework of quality operations. Active professionally in the spa industry since 1986, Vivienne shares her experience through her consulting, published work and speaking engagements. www.spaprofits.com

Sergio Pecorelli MD, PhD.
University of Brescia, Italy and Lorenzini Medical Foundation, New York

Sergio Pecorelli, MD PhD is a clinician, surgeon, Professor of Obstetrics & Gynecology at the University of Brescia, and Chancellor Emeritus at the University of Brescia. An Adjunct Professor at Yale School of Medicine, he is also the President of the Giovanni Lorenzini Medical Foundation, and Italian Government representative in the Steering Group of the European Innovation Partnership on Active and Healthy Ageing. With more than 300 published scientific papers, he has had a high volume clinical activity, and is the Director of the *"First 1,000 Days"* research project between the University of Brescia and Mount Sinai School of Medicine.

Robert Ranzi, Austria
Program Manager, Cluster Wellness

Since 2007, Robert Ranzi has been managing projects of Cluster Wellness Tyrol, Austria, a network with 130 enterprises, institutions and universities covering the health, wellness and tourism industry. The cluster organizes events, conventions and impulse workshops in order to introduce innovations. Robert is a clinical psychologist with experience and results in adult education, trainings and project development.

Vanessa Stoessel, Switzerland
Social Media Manager, On, Switzerland

With nine years of professional experience in the luxury spa and wellbeing industry and a personal passion for healthy living, Vanessa Stoessel oversees the social media strategy for On. On is a young Swiss sports company based in Zurich (Switzerland), Portland (Oregon) and Yokohama (Japan) creating design and technology award-winning running shoes which are stocked in more than 3000 specialist stores around the world. Their one mission is making running fun. Bringing together her work experiences in brand and concept development and marketing strategy development for wellbeing brands, she contributes to spreading the On message of healthy living through running across their social communities with reach across the globe. Vanessa is also a qualified yoga instructor and nutrition-certified health

APPENDIX

INDUSTRY SURVEYS

1. Spa & Wellness PROFESSIONAL Survey

Hello,

A comprehensive program of wellness offerings, which include mental wellbeing services and stress management focus, may become more important in the hotel and leisure industry. A team of professionals from the Global Wellness Institute's *Mental Wellness Initiative* would like your support to find out which products and services can help forward this trend.

Thank you for taking 5 to 7 minutes to complete a short survey. It will help us understand how to improve the mental wellbeing of clients/guests and employees through your valuable contribution.

For Professionals: goo.gl/aD46M4

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2. Spa & Wellness MANAGEMENT Survey

Hello,

A comprehensive program of wellness offerings, which include mental wellbeing services and stress management focus, may become more important in the hotel and leisure industry.

A group of professionals from the Global Wellness Institute's *Mental Wellness Initiative* would like your support to determine which products and services can help forward this trend. WE ARE SEEKING YOUR INPUT!

Thank you for taking 5 to 7 minutes to complete this short survey that will help us understand how to better improve the mental wellbeing of clients/guests/employee experience through your valuable contribution.

For Management: goo.gl/bXWX6a

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