

Stress & Mental Wellness

The Covid-19 Pandemic has forced people to realize the importance of a strong immune system and mental resilience. This article looks at the latter and the role that mental wellness has in offsetting stress, and thus mitigating the problems associated with prolonged stress.

The National Institute of Mental Health, the leading US Federal agency for mental health, defines stress as simply “the brain’s response to any demand.” Based on this definition, stress is not necessarily bad.

Stress leads to the body releasing the hormones cortisol and adrenaline; important in short-term situations requiring fast and strong responses (increasing the heart rate and blood pressure as part of the fight-or-flight mechanism). However, on a persistent basis, the prolonged production of these hormones causes both physical and mental issues.

Stress itself is not a psychiatric diagnosis, but it can exacerbate existing mental health problems, and if prolonged can cause mental health problems to develop.

Some academic papers detailing these negative consequences are presented later.

There are many causes and signs of stress, Fig.1.

Fig.1 Examples of Causes and Signs of Stress			
Causes		Signs	
1	Being under lots of pressure	1	Irritable, aggressive, impatient or wound up
2	Worrying about something	2	Over-burdened
3	Not having much or any control over the outcome of a situation	3	Anxious, nervous or afraid
4	Having responsibilities that you are finding overwhelming	4	Like your thoughts are racing and you cannot switch off
5	Not having enough work, activities or change in your life	5	Unable to enjoy yourself
6	Times of uncertainty	6	Depressed
		7	Uninterested in life
		8	Like you have lost your sense of humour
		9	A sense of dread
		10	Worried about your health

Source: National Association of Mental Health (mind.org.uk), Conceptasia, January 2021

Applying numbers to the emotions and feelings listed in Fig.1 involves serious methodological problems. In practice, governments and organizations undertake surveys.

To take the example of Japan, in 2015 Japan passed a law mandating all companies with 50 or more employees to offer their staff an annual “Stress Check”. The latter covers:

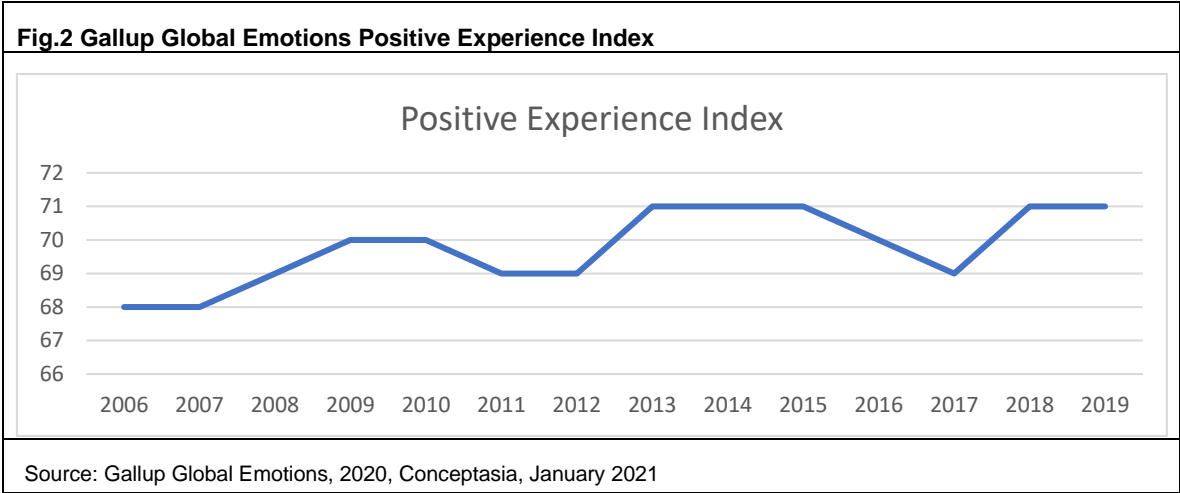
- 1) Psychosocial and other stressors in the work environment (job demands, degree of autonomy, job control, intensity, sense of purpose)
- 2) Mental and physical symptoms of stress (irritability, difficulty sleeping, etc.)
- 3) Social support (from supervisors, colleagues, family, friends).

An example of the Brief Job Stress Questionnaire is included at the end of this article, Fig.11 and Fig.12. In time, it is expected that the data in combination with academic study will enable better policies.

The Gallup organization provides an important source of good global data, having conducted an annual survey since 2005 covering 160 countries. The survey questions tackle life evaluation and experienced emotional wellbeing. The book *Wellbeing: The Five essential Elements* by Tom Rath and Jim Harter, ⁽¹⁾ pages 137 to 152, has a technical review of the Gallup Wellbeing database,.

Gallup's Positive and Negative Experience Indexes, Fig.2, Fig.3 (aggregations of the upper and lower five components respectively shown in Fig.4) measure life's intangibles, feelings and emotions. Replies respond to the question: "Think about how you felt yesterday".

The Positive Experience index has been broadly stable between 68 and 71 since 2006.



In contrast, the Negative Experience Index has seen a progressive deterioration (rising values) since 2006. Of the components, the two highest are Worry (39%) and Stress (35%).

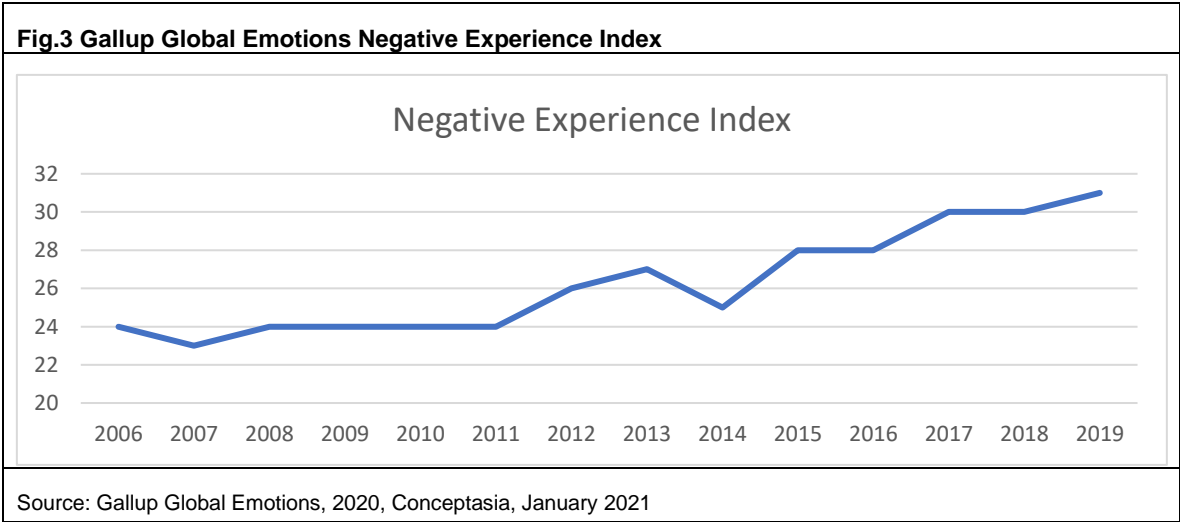


Fig.4 presents data on the emotional condition of people living in selected Asian countries, plus the USA and Australia. The data comes from the Gallup Global Emotions Report 2018 (so 2017 data). Six countries surveyed had more than one third of respondents indicating stress: Australia, China, Japan, Philippines. South Korea, and the USA.

For these countries, we have highlighted in grey cases where their positive emotion responses are relatively low (in the bottom four amongst the countries listed here). There is no simple relationship. Three of the six countries record only one low score.

Fig.4 Percentage of “Yes” responses by country for ten emotions													
2018	Australia	China	India	Indonesia	Japan	Malaysia	Philippines	Singapore	South Korea	Taiwan	Thailand	Vietnam	USA
Anger	10	16	27	18	14	18	34	7	16	11	14	14	22
Sadness	17	12	33	29	13	15	40	7	14	5	13	18	21
Stress	35	40	22	13	39	24	58	29	34	28	23	18	55
Worry	29	29	46	42	29	27	45	19	35	12	32	25	45
Pain	23	39	39	23	22	22	31	23	24	15	30	14	33
Enjoyment	77	87	87	82	63	79	73	73	60	84	83	54	82
Well-rested	71	84	84	85	77	79	72	84	76	81	78	85	67
Learned	60	43	43	65	54	49	72	60	41	53	65	44	64
Smiled	74	81	81	90	76	84	81	80	68	85	85	82	80
Respect	93	89	89	93	68	92	93	95	70	92	88	91	90

Note: “Think about how you felt yesterday”

Source: Gallup Global Emotions Report 2018, Conceptasia, January 2021

Surveys taken after the start of the Covid-19 Pandemic are indicating material increases in perceived stress. This is to be expected given concerns about health are interacting with the impediments to everyday life in countries introducing lockdown policies.

This includes Japan, even though its Covid-19 Pandemic experience has been relatively mild (for the details, please see our [J-Wellness & Covid-19: Why Japan has had relatively low deaths](#)). As quoted in the *Japan Times*, 7 September 2020, citing a survey by the University of Tsukuba, 38.3% and 41.8% of respondents felt stress “very much” and “somewhat” respectively, in the last month due to the coronavirus.

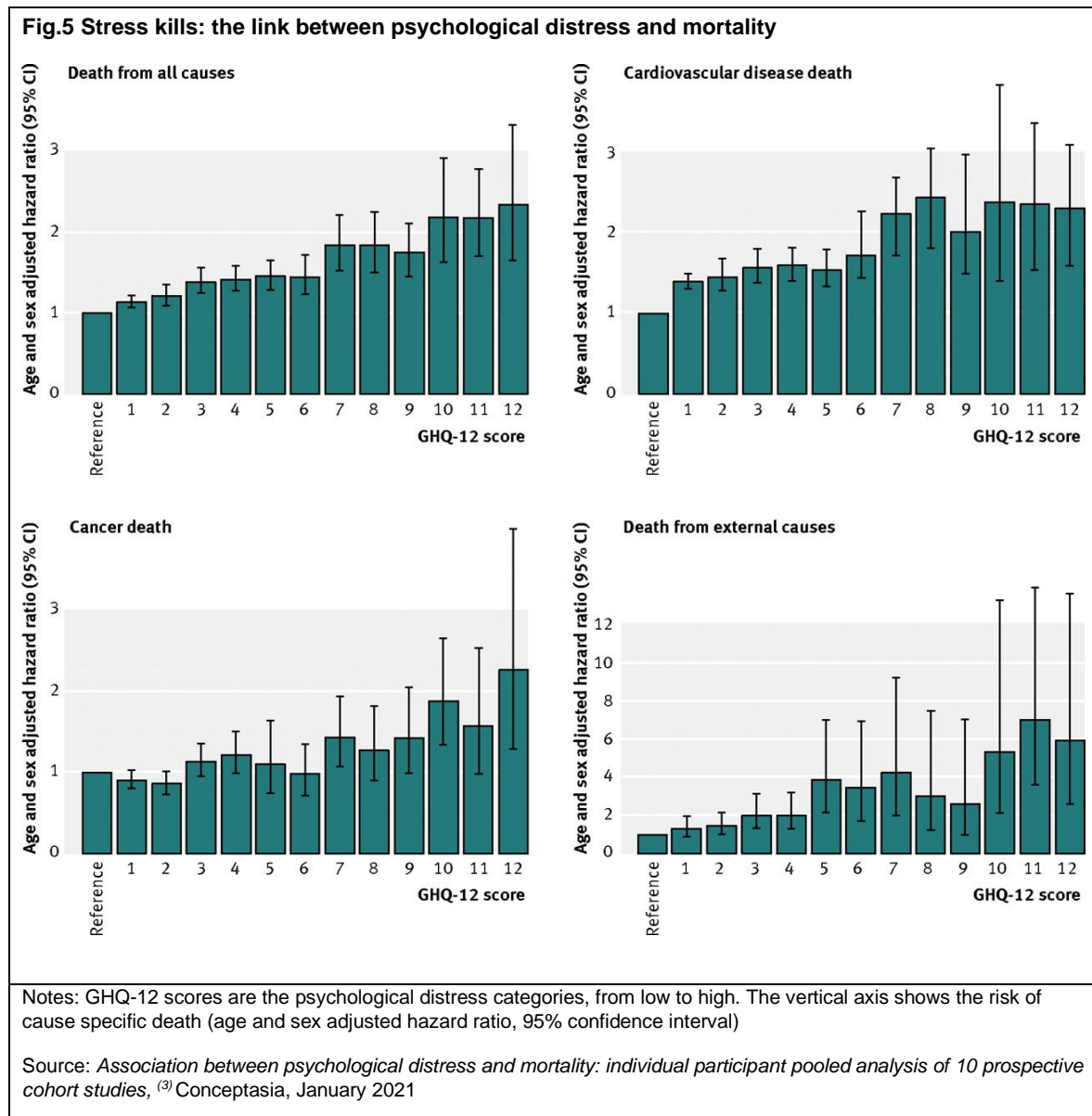
In June 2020, the Japanese Society of Psychiatry and Neurology and four other academic communities described the pandemic as a “disaster” in their mental health guidelines. ⁽²⁾

For more on Covid-19 and its impact on an individual’s Wellness, please see chapter one *The Economics of Wellness* in our book *J-Wellness 2020: The economics, career options, and investment opportunities*.

Stress kills

Research has quantified the link between psychological distress and mortality. ⁽³⁾

Utilizing large, pooled meta-analysis of ten population-based studies, and tracking 68,222 initially cardiovascular disease and cancer-free subjects over 8+ years, the research found that moderate stress increased the risk of death by 40%, with deaths largely due to heart disease and accidents.



Highly symptomatic stress increased the risk of death by more than 90%, with heart disease, cancer death and accidents being the main causes of death. Even the sub clinically symptomatic group (score 1-3) had a 20% increased risk of mortality after adjusting for age and sex. This association was essentially unchanged after adjusting for a range of covariates that included occupational social class, alcohol intake, and smoking, Fig.5.

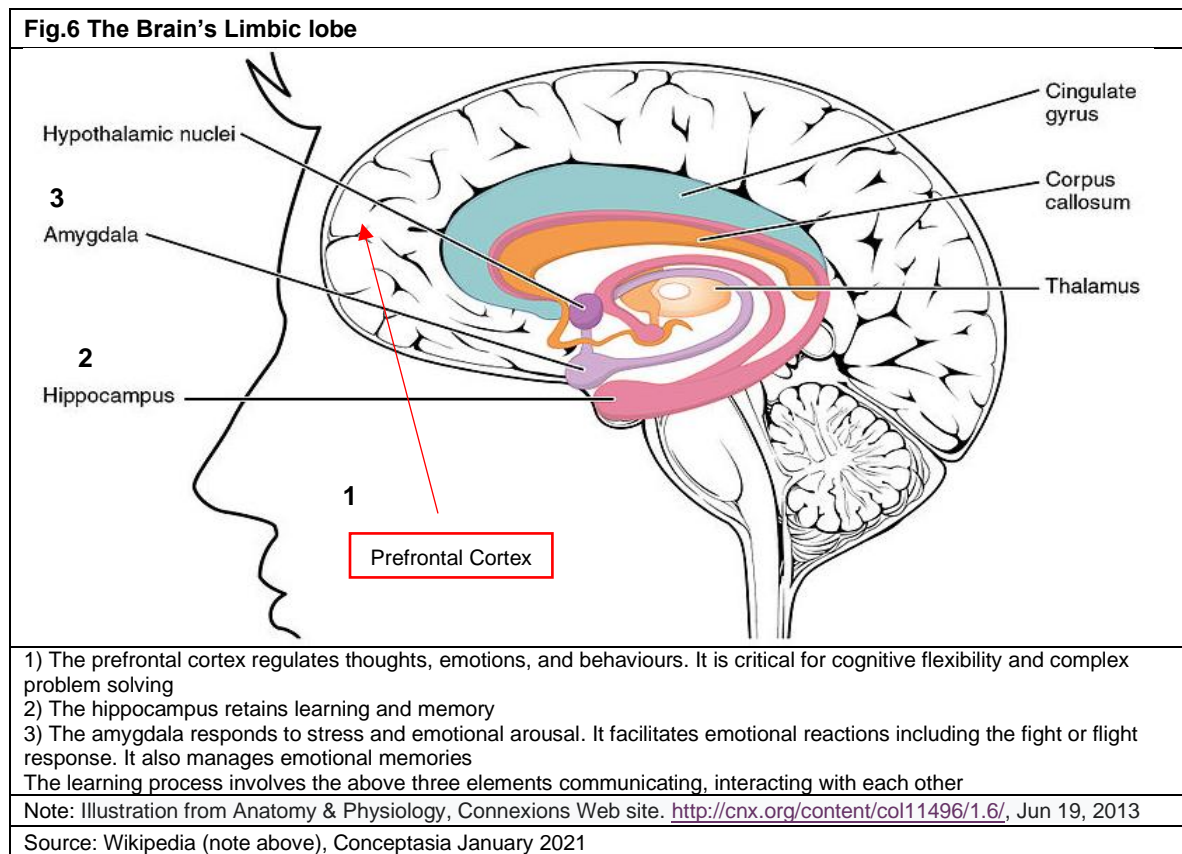
The study concluded: *Depression is a serious and debilitating disorder requiring treatment in its own right, but the finding that any level of psychological distress is associated with increased mortality and an increased risk of death from cardiovascular disease, external causes, and cancer (albeit only at higher levels of distress) is highly important.*

Other academic studies have documented the apparent links between prolonged stress and cardiovascular disease ^(4,5) and diabetes ⁽⁶⁾.

A recent academic report in Japan ⁽⁷⁾ found that prolonged stress raises cancer risk by 20% in men. The study tracked 79,301 men and women over 1990 to 2012.

How prolonged stress impacts the brain

The brain is the key organ of stress reactivity, coping, and recovery processes. Within the brain, a distributed neural circuitry determines what is threatening and thus stressful to the individual. Instrumental brain systems of this circuitry include the hippocampus, amygdala, and areas of the prefrontal cortex, ⁽⁸⁾ Together, these make up the limbic system, which regulates physiological and behavioural stress processes.



Experiences (including stress) reorganize neural pathways in the brain. Long lasting functional changes in the brain occur when we learn new things or memorize new information. These changes in neural connections are what are called neuroplasticity.

Prolonged stress is a trigger for persistent inflammation in the body, which can cause problems such as heart disease and diabetes. Under prolonged stress, these inflammatory proteins can seep into the brain, weakening the hippocampus. The latter is also weakened by hormones in the brain (e.g., cortisol and CRF) which evidence suggests also increase with stress. One consequence is that the amygdala can become dominant, “permanently switched on”, hyperactive. The result is impaired emotional and behavioural control (weak self-regulation skills), reduced attentiveness, all impacting learning, and memory capabilities.

Stress destabilizes the natural balance between rational thinking and emotions.

As the paper *Mechanisms of stress in the brain* ⁽⁹⁾ notes: A key result of stress is structural remodelling of the neural architecture, which may be a sign of successful adaptation, whereas persistence of these changes when stress ends indicate failed resilience. Excitatory amino acids and glucocorticoids have key roles in these processes, along with a growing list of extra- and intracellular mediators that includes endocannabinoids and brain-derived neurotrophic factor (BDNF).

Structural changes include fewer and altered connections in the prefrontal cortex, fewer connections and fewer new surviving neurons (smaller volume) in the hippocampus and altered connections and smaller volume in the amygdala.

Battling prolonged stress

The following are probably the basics:

- 1) Exercise has an anti-inflammatory benefit, helping to combat inflammation in the body. There is also evidence that exercise helps produce new brain cells, including in the hippocampus.
- 2) Social interaction. Oxytocin, the “love hormone”, produced from trusting relationships can offset the effects of cortisol, the “stress hormone”.
- 3) Ongoing learning appears to establish a cognitive reserve, which acts as a buffer to negative life events.
- 4) Meditation: A 2014 study ⁽¹⁰⁾ concluded that the evidence was moderately strong (on a scale of high, moderate, low, insufficient) that there is small but consistent benefit for mindfulness meditation programs to improve anxiety, depression, and pain.

A key question relates to the relative effectiveness of each of the above approaches. A recent study ⁽¹¹⁾ concluded with respect to reducing stress that: *In these RCTs, mindfulness is neither better nor worse than other feel-good practices such as physical exercise.* Meditation tends to be relatively simple to practise, cost effective to implement and low risk.

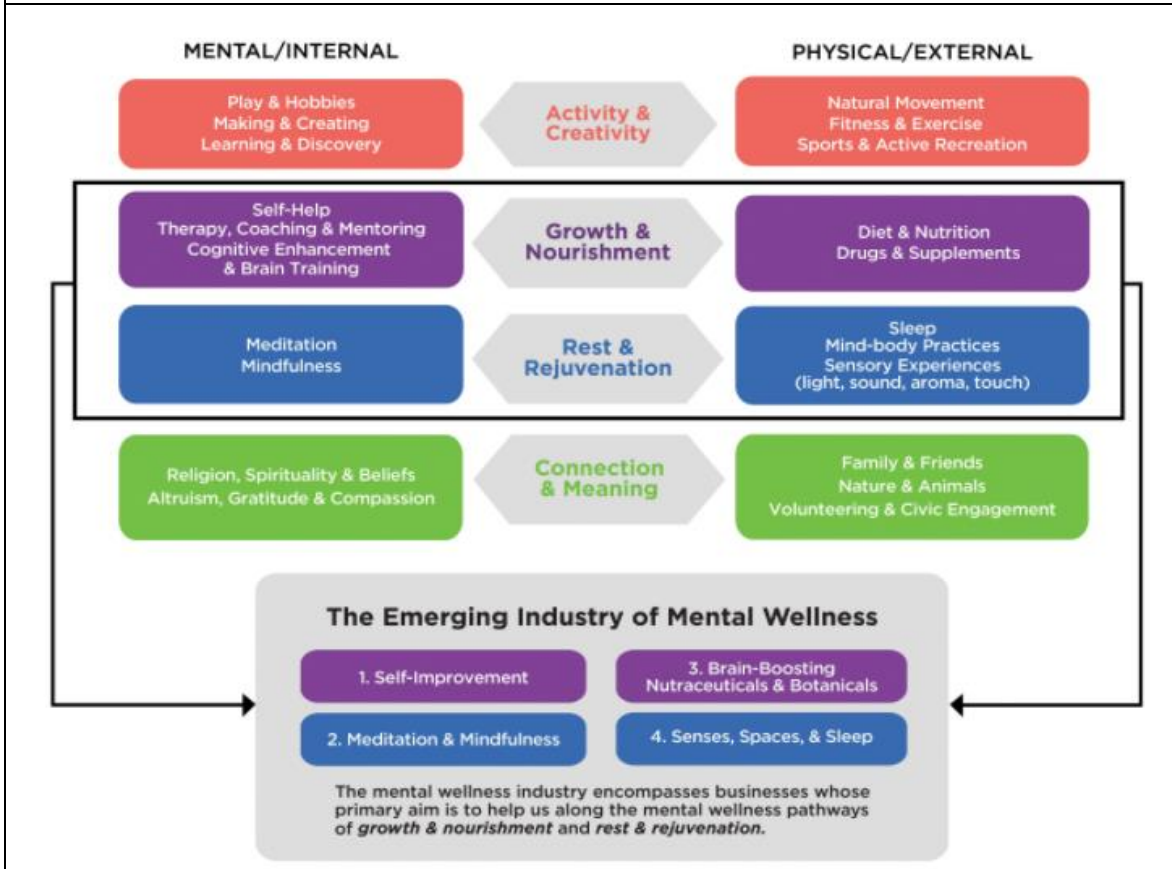
Mapping the Mental Wellness Economy

Wellness is about taking personal responsibility through a variety of good behaviors. Developing mental resilience in the face of stress is one beneficial aspect of wellness.

Given the variety of causes and signs of stress, and its subjective measurement, it is not surprising that a breadth of techniques and products have developed to aid mental resiliency.

The *Defining the Mental Wellness Economy* report of November 2020 from the Global Wellness Institute was the first research to measure mental wellness as a global industry, estimated at US\$121bn, and to identify and benchmark its key sub-segments, Fig.7 & Fig.8.

Fig.7 Pathways to Mental Wellness



Source: Global Wellness Institute, Conceptasia, January 2021

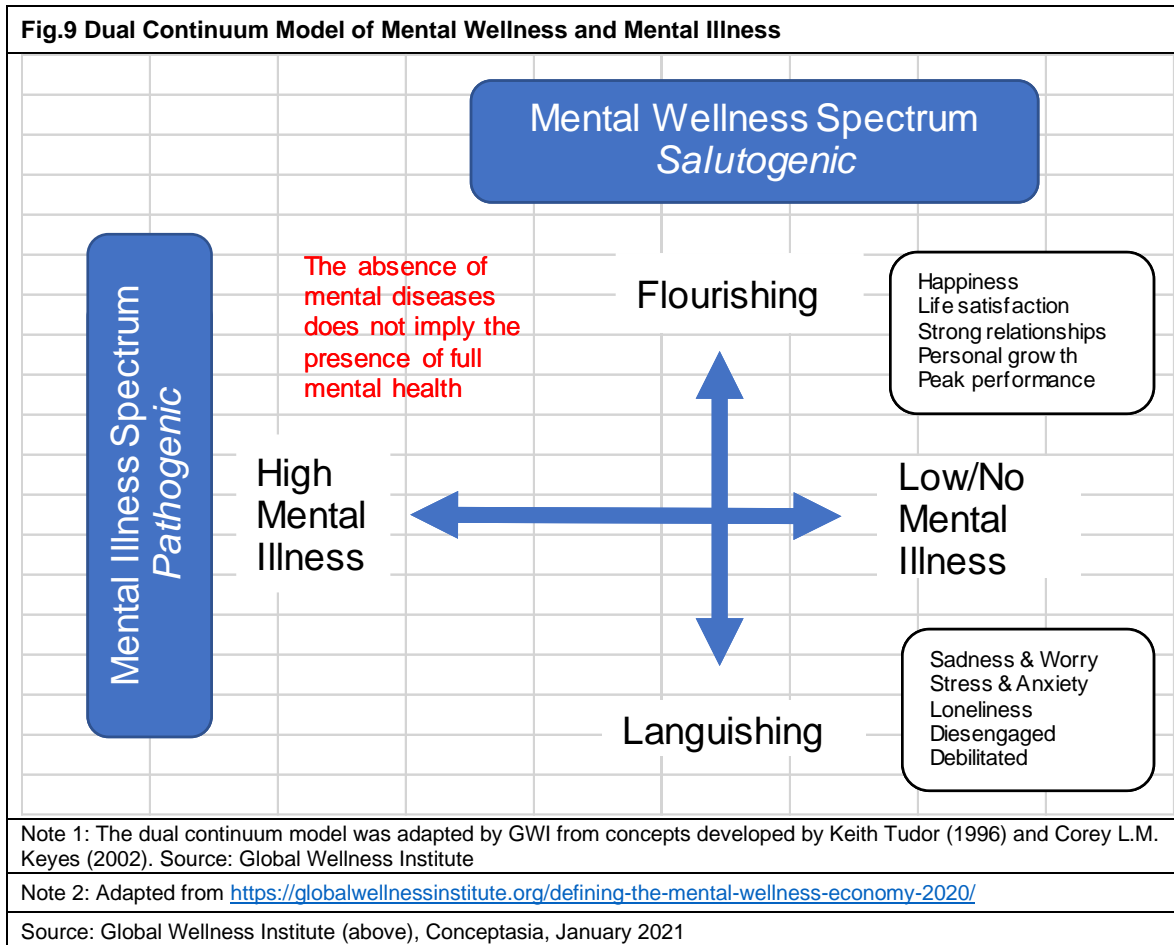
Fig.8 The US\$121 billion Mental Wellness Economy: key sub-segments

Senses, Spaces & Sleep (\$49.5 billion)	Brain-Boosting Nutraceuticals & Botanicals (\$34.8 bn)
Sleep Services & Napping	Functional Foods & Beverage for Brain Health
Sensory Products & Services	Supplements for Brain Health
Sleep Monitors & Trackers	Natural Sleep Remedies
Sleep & Sensory Apps	Cannabis & Psychedelics – Drugs & Products, Clinics, Therapies & Retreats
Sensory Technology & Wearables	
Sensory Spaces	
	Self-Improvement (\$33.6 billion)
	Self-Help Gurus & Personalities
Meditation & Mindfulness (\$2.9 billion)	Self-Help Organizations & Institutions
Studios/Centers/Teachers	Self-Help Coaching & Therapy Apps
Apps & Technology	Brain Training
	Anti-Loneliness Apps & Technology

Source: Global Wellness Institute, Conceptasia, January 2021

In line with the Global Wellness Institute's *Defining the Mental Wellness Economy* report, we believe that there is no simple continuum from mental illness to wellness, Fig.9.

The absence of mental diseases does not imply the presence of full mental health. Mental illness and wellness can co-exist; mental wellness can mitigate mental illness.



One research report ⁽¹²⁾ has detailed the occupational stress characteristics of employees with flourishing mental wellness. Of a total of 7012 research participants (4,402 men, 2,610 women), 12.4% had flourishing mental wellness (survey based). After normalizing for sex, age, and other individual background factors, reward from work, support from colleagues and superiors, and workload were positively associated factors, with mental workload being a negative factor.

The authors commented: *Our results also showed that flourishing mental health was inversely associated with mental workload. It is essential for managers to support subordinates who are facing troubles or help new employees to orient themselves toward their work so that they can reduce their mental workload. Moreover, our result indicated that reducing mental workload only while keeping appropriate workload could be more effective in terms of maintaining good mental health. This was an important finding because managers often try to reduce both workloads as a countermeasure against mental illness.*

Stress and Mental Wellness: a conclusion

Referring to Fig.9, Covid-19 concerns about health are interacting with the impediments to everyday life in countries introducing lockdown policies and leading to many moving southwards down the mental wellness spectrum from flourishing (happiness, life satisfaction, strong relationships, personal growth, and peak performance) towards languishing (sadness & worry, stress & anxiety, loneliness, disengaged, and debilitated).

This is eroding mental wellness resilience to the development of mental health problems.

Given the scale of the issues involved, it is surprising that the Mental Wellness Economy is currently estimated at just 3% of the Global Wellness Economy, Fig.10. This could be interpreted as a major market opportunity.

Here at [Conceptasia](https://www.conceptasia.com), we have knowledge and networks in the developing meditation market.

Fig.10 Global Wellness segments, in US\$ billions and market share			
		US\$ billion	% of total
1	Personal Care, Beauty and Anti-Aging	1,083	23
2	Physical Activity	828	18
3	Healthy Eating, Nutrition and Weight Loss	702	15
4	Wellness Tourism	639	13
5	Preventative and Personalized Medicine and Public Health	575	12
6	Traditional and Complementary Medicine	360	8
7	Wellness Lifestyle Real Estate	134	3
8	Mental Wellness	121	3
9	Spa Economy	119	3
10	Thermal/Mineral Springs	56	1
11	Workplace Wellness	48	1
Total		4,665 (*)	100
Note: the total includes overlap between segments. The GWI estimates the Global Wellness Economy at US\$4.5 trillion			
Source: Global Wellness Institute, <i>Global Wellness Economy Monitor</i> , October 2018; Global Wellness Institute, <i>Move to be well: The Global Economy of Physical Activity</i> , October 2019, Defining the Mental Wellness Economy, November 2020, Conceptasia, January 2021			

Fig.11 The Brief Job Stress Questionnaire English Version (page one)

The Brief Job Stress Questionnaire English version

Please answer the following questions concerning your job by circling the number that best fits your situation.

	Very much so	Moderately so	Somewhat	Not at all
1. I have an extremely large amount of work to do-----	1	2	3	4
2. I can't complete work in the required time-----	1	2	3	4
3. I have to work as hard as I can-----	1	2	3	4
4. I have to pay very careful attention-----	1	2	3	4
5. My job is difficult in that it requires a high level of knowledge and technical skill-----	1	2	3	4
6. I need to be constantly thinking about work throughout the working day-----	1	2	3	4
7. My job requires a lot of physical work-----	1	2	3	4
8. I can work at my own pace-----	1	2	3	4
9. I can choose how and in what order to do my work-----	1	2	3	4
10. I can reflect my opinions on workplace policy-----	1	2	3	4
11. My knowledge and skills are rarely used at work-----	1	2	3	4
12. There are differences of opinion within my department-----	1	2	3	4
13. My department does not get along well with other departments-----	1	2	3	4
14. The atmosphere in my workplace is friendly-----	1	2	3	4
15. My working environment is poor (e.g. noise, lighting, temperature, ventilation)-----	1	2	3	4
16. This job suits me well-----	1	2	3	4
17. My job is worth doing-----	1	2	3	4

Please answer the following questions concerning your health during the past month by circling the number that best fits your situation.

	Almost never	Sometimes	Often	Almost always
18. I have been very active-----	1	2	3	4
19. I have been full of energy-----	1	2	3	4
20. I have been lively-----	1	2	3	4
21. I have felt angry-----	1	2	3	4
22. I have been inwardly annoyed or aggravated-----	1	2	3	4
23. I have felt irritable-----	1	2	3	4
24. I have felt extremely tired-----	1	2	3	4
25. I have felt exhausted-----	1	2	3	4
26. I have felt weary or listless-----	1	2	3	4
27. I have felt tense-----	1	2	3	4
28. I have felt worried or insecure-----	1	2	3	4
29. I have felt restless-----	1	2	3	4
30. I have been depressed-----	1	2	3	4
31. I have thought that doing anything was a hassle-----	1	2	3	4
32. I have been unable to concentrate-----	1	2	3	4

Fig.12 The Brief Job Stress Questionnaire English Version (page two)

33. I have felt gloomy-----	1	2	3	4
34. I have been unable to handle work-----	1	2	3	4
35. I have felt sad-----	1	2	3	4
36. I have felt dizzy-----	1	2	3	4
37. I have experienced joint pains-----	1	2	3	4
38. I have experienced headaches-----	1	2	3	4
39. I have had a stiff neck and / or shoulders-----	1	2	3	4
40. I have had lower back pain-----	1	2	3	4
41. I have had eyestrain-----	1	2	3	4
42. I have experienced heart palpitations or shortness of breath-----	1	2	3	4
43. I have experienced stomach and / or intestine problems-----	1	2	3	4
44. I have lost my appetite-----	1	2	3	4
45. I have experienced diarrhea and / or constipation-----	1	2	3	4
46. I haven't been able to sleep well-----	1	2	3	4

Please answer the following questions concerning people around you by circling the number that best fits your situation.

	Extremely	Very much	Somewhat	Not at all
How freely can you talk with the following people?				
47. Superiors-----	1	2	3	4
48. Co-workers-----	1	2	3	4
49. Spouse, family, friends, etc.-----	1	2	3	4
How reliable are the following people when you are troubled?				
50. Superiors-----	1	2	3	4
51. Co-workers-----	1	2	3	4
52. Spouse, family, friends, etc.-----	1	2	3	4
How well will the following people listen to you when you ask for advice on personal matters?				
53. Superiors-----	1	2	3	4
54. Co-workers-----	1	2	3	4
55. Spouse, family, friends, etc.-----	1	2	3	4

Please answer the following questions concerning satisfaction by circling the number that best fits your situation.

	Satisfied	Somewhat satisfied	Somewhat dissatisfied	Dissatisfied
56. I am satisfied with my job-----	1	2	3	4
57. I am satisfied with my family life-----	1	2	3	4

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