

# A GENERAL THEORY OF BEHAVIOUR

DAVID F. MARKS

SAGE SWIFTS



Los Angeles | London | New Delhi  
Singapore | Washington DC | Melbourne

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# RESILIENCE, HAPPINESS, INTERVENTION

Resilience: an ability to recover from or adjust  
easily to misfortune or change.

Merriam-Webster

## RESILIENCE

The philosopher Jean-Paul Sartre proclaimed that all of psychology can be explained with two simple words – childhood decides.<sup>1</sup> Research finds this opinion to be largely correct.<sup>2</sup> A US survey with a nationally representative sample of 9282 adults examined the joint associations of 12 retrospectively reported childhood adversities (CAs), aka early life stresses (ELS), with the first onset of *DSM-IV* disorders. The CAs studied were highly prevalent and intercorrelated. The CAs in a maladaptive cluster (parental mental illness, substance abuse disorder and criminality; family violence; physical abuse; sexual abuse;

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<sup>1</sup>Sartre, J.P. (1964). *Les mots*. Paris: Gallimard. pp. 254–255.

<sup>2</sup>Green, J.G., McLaughlin, K.A., Berglund, P.A., Gruber, M.J., Sampson, N.A., Zaslavsky, A.M. and Kessler, R.C. (2010). Childhood adversities and adult psychiatric disorders in the national comorbidity survey replication I: Associations with first onset of DSM-IV disorders. *Archives of General Psychiatry*, 67(2), 113–123.



and neglect) were the strongest correlates of disorder onset. Analysis suggested that CAs are associated with 44.6% of all childhood-onset disorders and with 25.9–32.0% of later-onset disorders. CAs have powerful associations with the onset of many types of largely primary mental disorders throughout the life course, e.g. mood 26.2%, anxiety 32.4%, substance use 21.0%, disruptive behaviour 41.2%. Evidence from China on left-behind children indicates that early separation from parents has negative influences on the psychological development of teenagers. However, psychological resilience in left-behind children is *higher* than those not left behind.<sup>3</sup>

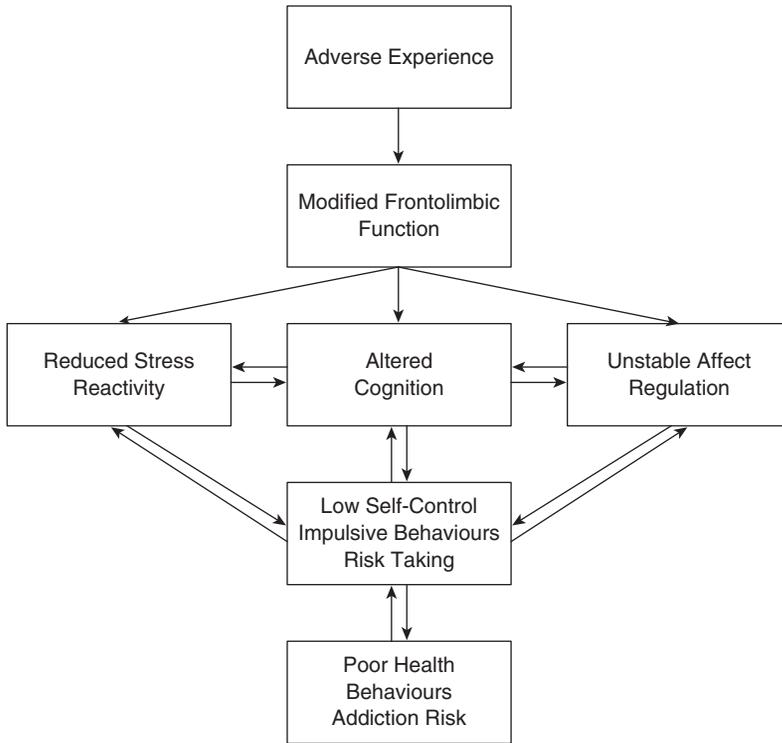
Chris Murgatroyd and Dietmar Spengler (2011) argue that epigenetic mechanisms mediate the gene–environment ‘dialogue’ in early life and give rise to persistent epigenetic programming of adult physiology eventually resulting in disease.<sup>4</sup> The most critical stages are the prenatal period continuing through the neonatal and early adolescent stages, during which the environment is able to fine-tune neural circuitry. The evidence suggests that ELS can induce persistent changes in the programming of neurobiological stress response systems, which could predispose a person to develop depression, especially when there is later additional exposure to stress. A model of early life stress is presented in Figure 10.1.

ELS has deleterious effects on the nervous, endocrine and immune systems, which can be permanently altered in structure and function by early life programming (ELP). We describe a few findings emerging from studies of ELP in humans. One focus has been on the effect of ELS or glucocorticoids upon hypothalamus-pituitary-adrenal axis (HPA axis) activity. Targets suggested for ELP include glucocorticoid receptor gene expression and the corticotrophin-releasing hormone system. ELP of neuroendocrine systems and behaviour by stress and exogenous or endogenous glucocorticoids has been associated with the development of common disorders. It has been suggested that the glucocorticoid receptor-encoding gene, nuclear receptor subfamily 3 group C member 1 (NR3C1), is downregulated in the hippocampus of individuals who have been exposed to ELS, which leads to an overactive HPA axis, the development of

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<sup>3</sup>Liang, L., Xiao, Q. and Yang, Y. (2018). The young people with left-behind experiences in childhood have higher psychological capital of resilience. *Journal of Health Psychology* (in press).

<sup>4</sup>Murgatroyd, C. and Spengler, D. (2011). Epigenetic programming of the HPA axis: Early life decides. *Stress*, 14(6), 581–589.



**Figure 10.1** Model of early life stress. To indicate the links of the model to the *General Theory*, the model has been adapted with a few minor amendments from the conceptual model published by Lovallo (2013).<sup>5</sup> The diagram summarizes how the experience of stressful events in childhood and adolescence may programme behaviour patterns towards addiction and other adverse health outcomes. Life experience is processed through the frontolimbic structures of the Central Homeostatic Network. Early life programming has three consequences: 1) stress reactivity is reduced; 2) cognitive processing is shifted towards a focus on short-term goals and more impulsive response selection; 3) regulation of affect is less stable and prone to negative states. These three consequences tend to produce an impulsive behavioural style of risk taking and reduced self-control.

<sup>5</sup>Lovallo, W.R. (2013). Early life adversity reduces stress reactivity and enhances impulsive behaviour: Implications for health behaviours. *International Journal of Psychophysiology*, 90(1), 8–16.

anxiety traits, and increased risk of suicidal behaviour.<sup>6</sup> Prenatal exposure to maternal depression may alter neonatal methylation of the human glucocorticoid receptor gene (NR3C1) and increase infant cortisol stress responses.<sup>7</sup> Another study shows that altered stress reactivity following childhood trauma in humans is related to altered DNA methylation levels at the KITLG locus.<sup>8</sup> The findings of many research studies converge on one significant truth:

**Principle XIX (Programming): The set ranges of all homeostasis systems are programmed by genetics, epigenetics and early life experience.**

Principle XIX has numerous implications, e.g.:

Stable, secure and protective early life experience produces high set range values predictive of high resilience, stability and self-control that can positively influence both physical health and SWB throughout life due to an in-built tendency to avoid use of alcohol and drugs and high-risk behaviours such as smoking. [AP 073]

Unstable, insecure or adverse early life experience produces low set range values predictive of low resilience, impulsiveness and self-control and can negatively influence both physical health and SWB throughout life due to an in-built tendency to use alcohol and drugs and partake in high-risk behaviours such as smoking. [AP 074]

An overactive HPA axis and the development of anxiety traits predispose individuals to increased risk of depression, insomnia and suicide. [AP 075]

Early life programming is expected to show the normally observed gradients across the population distribution of socioeconomic position, education and income, and to vary according to gender, ethnicity and other sociodemographic conditions. [AP 076]

<sup>6</sup>Turecki, G. (2014). The molecular bases of the suicidal brain. *Nature Reviews Neuroscience*, 15(12), 802.

<sup>7</sup>Oberlander, T.F., Weinberg, J., Papsdorf, M., Grunau, R., Misri, S. and Devlin, A.M. (2008). Prenatal exposure to maternal depression, neonatal methylation of human glucocorticoid receptor gene (NR3C1) and infant cortisol stress responses. *Epigenetics*, 3(2), 97–106.

<sup>8</sup>Houtepen, L.C., Vinkers, C.H., Carrillo-Roa, T., Hiemstra, M., van Lier, P.A., Meeus, W., Branje, S., Heim, C.M., Nemeroff, C.B., Mill, J., Schalkwyk, L.C., Creighton, M.P., Kahn, R.S., Joëls, M., Binder, E.B. and Boks, M.P.M. (2016). Genome-wide DNA methylation levels and altered cortisol stress reactivity following childhood trauma in humans. *Nature Communications*, 7.

Resilient early life programming is important not only as a psychological issue, but as an issue about equity and social justice: less fortunate sectors of the population do not have access to all of the resources to provide a foundation of stability and security to enable infants, children and families to thrive.<sup>9</sup> A minimum level of resources is required to provide shelter, water, food and sanitation as a foundation for human resilience at the lower end of the needs pyramid.

## HAPPINESS

Hedonic behaviour is under homeostatic control with the REF to reset to a set range. Everybody strives for equilibrium within a set range of happiness. No matter how the surrounding circumstances may change, personal happiness does not change by very much nor more than transiently. Life-changing events such as becoming quadriplegic after a road accident or winning \$50m in a lottery are not expected to cause any permanent changes in happiness.<sup>10</sup>

SWB is a person's overall evaluation of their satisfaction with life and specific feelings in response to events and circumstances. The set range theory of happiness is based on 'Adaptation Level Theory'.<sup>11</sup> Brickman and Campbell originally stated the fundamental postulate thus: '*the subjective experience of stimulus input is a function not of the absolute level of that input but of the discrepancy between the input and past levels*'.<sup>12</sup> Twenty-seven years later, Robert A. Cummins introduced the hypothesis that SWB is protected by homeostasis: '*It is proposed that life satisfaction is a variable under homeostatic control and with*

<sup>9</sup>For a discussion of equitable resilience in practice, see Matin, N., Forrester, J. and Ensor, J. (2018). What is equitable resilience? *World Development*, 109, 197–205.

<sup>10</sup>Brickman, P., Coates, D. and Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality and Social Psychology*, 36(8), 917.

<sup>11</sup>Helson, H. (1948). Adaptation-level as a basis for a quantitative theory of frames of reference. *Psychological Review*, 55(6), 297–313.

<sup>12</sup>The theory was later given the underwhelming moniker of the 'hedonic treadmill model'. See: Brickman, P. and Campbell, D.T. (1971). Hedonic relativism and planning the good society. In M.H. Appley (ed.), *Adaptation Level Theory: A Symposium*. New York: Academic Press. pp. 287–302. (Quote taken from p. 287.) The first use of the term 'set point' in relation to stability of personality occurs in McGue, M., Bacon, S. and Lykken, D.T. (1993). Personality stability and change in early adulthood: A behavioural genetic analysis. *Developmental Psychology*, 29, 96–109.

a homeostatic set point ensuring that populations have, on average, a positive view of their lives.<sup>13</sup> In agreement with Robert Cummins, the *General Theory* holds that happiness is pulled by the homeostatic REF towards a fixed set range determined by genetics, epigenetics and early life experience. One implication of this surprising fact is that individual choices and public policy cannot be expected to make substantive differences to personal happiness. SWB always resets to a fixed set range.

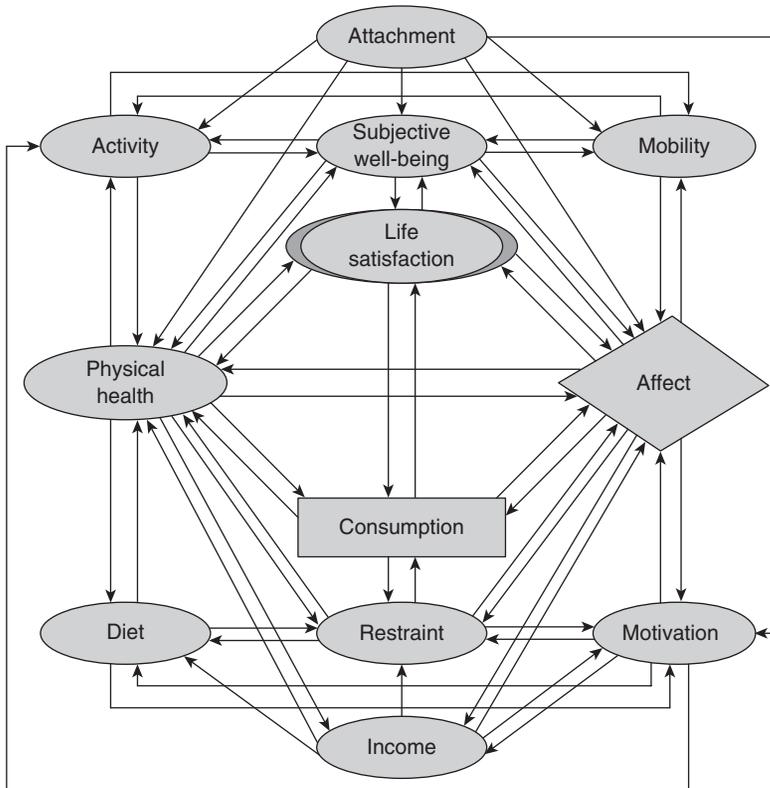
Outward and inward stability in any living organism is only possible with constant accommodation and adaptation. Organisms strive to maintain equilibrium and stability with the surrounding environment through millions of micro-adjustments and adaptations to the continuously changing circumstances. The majority of fine adjustments are occurring at an unconscious level, hidden from both the individual actor and external observers. The brutal truth is that the majority of determinants of individual well-being cannot possibly be controlled by the individual. Genetics, epigenetics, early life experience, place of birth, culture, religion, socioeconomic status of parents, educational opportunities, physical environment and many other determinants fix set ranges beyond the individual's consent or control.<sup>14</sup> These expectations should serve as an antidote to the false hope of increased happiness for all that is the mantra of 'Positive Psychology' and which, ultimately, will backfire.<sup>15</sup> Here, we focus on the *General Theory*, explaining the infinite variety of adaptations of behaviour using the 'equipment' and 'factory settings' that each individual has at their disposal.

The *General Theory* holds that human beings continuously adapt and accommodate to, and actively repair, the continuously changing conditions of the environment with the goal of maximizing stability and security. A General Theory of Well-Being (GTWB) is illustrated in Figure 10.2.

<sup>13</sup>Cummins, R.A. (1998). The second approximation to an international standard for life satisfaction. *Social Indicators Research*, 43(3), 307–334. See p. 330.

<sup>14</sup>These issues are discussed in detail in Marks, D.F., Murray, M. and Estacio, E.V. (2018). *Health Psychology: Theory, Research and Practice*. London: SAGE Publishing.

<sup>15</sup>Fritz, M.M. and Lyubomirsky, S. (2018). Whither happiness? When, how, and why might positive activities undermine well-being. In J.P. Forgas and R.F. Baumeister (eds.), *The Social Psychology of Living Well*. London: Routledge. pp. 117–131.



**Figure 10.2** A general theory of well-being (GTWB).<sup>16</sup> This schematic illustration focuses on how behaviours of activity, diet, restraint, affect and consumption influence physical health and subjective well-being (SWB). Twelve processes are in three intermeshed, concentric networks. The innermost network consists of four core processes: physical health, life satisfaction, affect and consumption. The intermediate network consists of 10 processes: the four core processes plus activity, subjective well-being, mobility, motivation, restraint and diet. The outermost network consists of 12 processes: 10 intermediate processes plus income and attachment. Multiple other networks are interconnected with these 12 featured processes, but for practical purposes are not included. The general theory of well-being is new and needs to be tested in prospective studies. Reprinted by permission from Marks (2015).<sup>17</sup>

<sup>16</sup>To avoid duplication, this illustration does not incorporate, in part or in whole, networks presented elsewhere in this book.

<sup>17</sup>Marks, D.F. (2015). Homeostatic theory of obesity. *Health Psychology Open*, 2(1), 2055102915590692. <https://doi.org/10.1177/2055102915590692>

The GTBW defines established causal relationships between significant determinants of physical and mental well-being starting with attachment in early life.<sup>18</sup> The manner in which a baby attaches to her/his mother, father and/or other caregiver creates a life template based on the infant's need to maintain proximity to an anchor person as a 'secure base' for exploring the environment. The availability and responsiveness of the parent/guardian to attachment are internalized and generalized to lifelong relationships.<sup>19</sup> The different ways of attaching to anchor figures are termed 'attachment style'. Other causal links exist between life satisfaction, positive affect, moderate levels of consumption and well-being, as indicated in the theory. Attachment style influences life satisfaction and a gamut of health-related behaviours, including alcohol abuse, drug abuse, smoking, insomnia, accidental injury, trauma, grief, chronic illness and responses to natural disasters. Another significant mediator of the association between life satisfaction and positive health outcomes is *a moderate level of consumption*.

Of key importance to SWB is current 'affect' or 'mood'. We have possibly heard the excuse from a grumpy person about 'getting out of bed on the wrong side'. In part, that's about not having a good night's sleep. Individual 'chronotype' also can influence SWB.<sup>20</sup> SWB can follow regular daily, weekly, seasonal and even annual cycles. Greg Murray and colleagues found that 13.0% of positive affect (PA) variance was explained by a 24-hr sinusoid.<sup>21</sup> In a constant routine protocol, 25.0% of PA variance was explained by the unmasked circadian rhythm in core body temperature. As expected, PA follows a circadian rhythm. Our Cook's tour of affect in Chapter 7 discusses the role of cognitive appraisal and we need to take a longer view. How does SWB change over the lifetime? How is SWB affected by positive and negative events? Apart from providing country league tables, does SWB have any genuine predictive value?

<sup>18</sup>Bowlby, J. (1969). *Attachment and Loss, Volume I: Attachment*. New York: Random House; Bowlby, J. (1973). *Attachment and Loss, Volume II: Separation*. New York: Basic Books; Bowlby, J. (1980). *Attachment and Loss, Volume III: Loss*. New York: Basic Books.

<sup>19</sup>Ainsworth, M.D.S., Blehar, M.C., Waters, E. and Wall, S.N. (2015). *Patterns of Attachment: A Psychological Study of the Strange Situation*. Hove: Psychology Press.

<sup>20</sup>Roenneberg, T., Wirz-Justice, A. and Merrow, M. (2003). Life between clocks: Daily temporal patterns of human chronotypes. *Journal of Biological Rhythms*, 18(1), 80–90.

<sup>21</sup>Murray, G., Nicholas, C.L., Kleiman, J., Dwyer, R., Carrington, M.J., Allen, N.B. and Trinder, J. (2009). Nature's clocks and human mood: The circadian system modulates reward motivation. *Emotion*, 9(5), 705.

On the population level, SWB is normally distributed. Using a rating scale from 'feeling very bad' to 'feeling very good', only a few people lie below the scale mid-point. General population data from over 60,000 people gathered over 13 years by the Australian Unity Wellbeing Index surveys found that only 4% of scores lie below 50 percentage points.<sup>22</sup> Feeling good about oneself is the norm. While it is generally agreed that SWB consists of both affect and cognition, it is thought that SWB mainly comprises mood.<sup>23</sup>

Subjective well-being is affected by current mood and recent events but only transiently. [AP 077]<sup>24</sup>

**Principle XX (Stability of Subjective Well-being): Subjective well-being (SWB) is homeostatically protected and stable. Changes in SWB are normally reset to a fixed set range within a few months or years.**

Principle XX applies to individuals and populations. The ideas of equality of opportunity – the 'American Dream' – that rising income produces increased SWB are popular myths. Well-controlled investigations suggest that:

For neither individuals nor populations does 'money bring happiness'. National and individual happiness levels are unrelated to indices of wealth. [AP 078]

From 1945 to 1970, SWB in the United States did not change, even though real income (after taxes and inflation) had doubled.<sup>25</sup> Ed Diener's research group explored changes in 10-year longitudinal data in a probability sample of 4942 American adults. *The zero order correlation between SWB at Time 2 and income*

<sup>22</sup>Cummins, R.A., Woerner, J., Gibson, A., Weinberg, M., Collard, J. and Chester, M. (2004). *Australian Unity Wellbeing Index Survey 10*. Australian Centre for Quality of Life, Deakin University, Melbourne.

<sup>23</sup>Cummins, R.A. (2016). The theory of subjective wellbeing homeostasis: A contribution to understanding life quality. In F. Maggino (ed.), *A Life Devoted to Quality of Life*. Cham-paign, OH: Springer. pp. 61–79.

<sup>24</sup>Suh, E., Diener, E. and Fujita, F. (1996). Events and subjective well-being: Only recent events matter. *Journal of Personality and Social Psychology*, 70(5), 1091.

<sup>25</sup>Easterlin, R.A. (1974). Does economic growth improve the human lot? Some empirical evidence. In P.A. David and W.R. Melvin (eds), *Nations and Households in Economic Growth*. Palo Alto, CA: Stanford University Press. pp. 98–125.

change from Time 1 to Time 2 was  $r(4440) = 0.001$ . The study did manage to find significant correlations between subjective well-being and family income, but the methodology of cross-sectional correlation is flawed owing to the hidden presence of potential confounders.<sup>26</sup> You can show almost anything in an ecological study, e.g. that SWB increases with the number of firearms manufactured in the USA. Adaptation to events can only be studied adequately in longitudinal studies using multiple measurements, ideally both before and after the event to account for anticipatory effects.<sup>27</sup> Evidence reviewed by the economist Richard Easterlin suggests that a long-term null relationship exists between happiness and income, a finding that holds for rich countries, developing countries and eastern European countries transitioning from socialism to capitalism.<sup>28</sup> SWB remains flat whatever happens to the economy. Homeostasis keeps it that way.

In their work on the 'spirit level', Richard G. Wilkinson and Kate E. Pickett have shown that population health and well-being is better in societies where income is more equally distributed. Wilkinson and Pickett conclude that '*these relationships are likely to reflect a sensitivity of health and social problems to the scale of social stratification and status competition, underpinned by societal differences in material inequality*'.<sup>29</sup>

Social problems, including mental illness, violence, imprisonment, lack of trust, teenage births, obesity, drug abuse and poor educational performance are more common in more unequal societies. [AP 079]

## INTERVENTION

Multiple interventions exist to increase resilience, happiness and well-being at individual, organizational and societal levels. The objective is to enhance

<sup>26</sup>Diener, E. and Lucas, R.E. (2000). Personality and subjective well-being across the life span. In V.J. Molfese and D.L. Molfese (eds), *Temperament and Personality Development Across the Life Span*. Abingdon, Oxon.: Psychology Press. pp. 221–244.

<sup>27</sup>Luhmann, M., Hofmann, W., Eid, M. and Lucas, R.E. (2012). Subjective well-being and adaptation to life events: A meta-analysis. *Journal of Personality and Social Psychology*, 102(3), 592.

<sup>28</sup>Easterlin, R.A., McVey, L.A., Switek, M., Sawangfa, O. and Zweig, J.S. (2010). The happiness–income paradox revisited. *Proceedings of the National Academy of Sciences*, 107(52), 22463–22468.

<sup>29</sup>Wilkinson, R.G. and Pickett, K.E. (2009). Income inequality and social dysfunction. *Annual Review of Sociology*, 35, 493–511.

engagement, affect and *joie de vivre* and to reduce all forms of human misery. The goal to create more resilience and happiness is a moral and political imperative, but one obstinate barrier, rarely discussed by psychologists, is the pervasive structural inequity that exists within all societies – capitalist, communist or any other.

The *General Theory* holds that early life programming is involved in fixing the set ranges that determine the resilience, wealth and well-being of our youth and adulthood. Furthermore, if the basic foundations are absent, the developing person will not have at their disposal the necessary tools for robust resilience or self-control and so they will be unlikely to gain the positive outcomes achieved by those having more solid foundations.

Psychological homeostasis occurs in response to the infinite variety of circumstances that can affect well-being using purposeful behavioural regulation, e.g. cooperating, communicating, sharing, working, eating, drinking, resting, sleeping or engaging in activities of varying intensity and intimacy. [AP 080]

Life events that are experienced as catastrophic traumas such as unemployment and marriage break-up can cause long-term hedonic set range changes that may never reset.<sup>30</sup> The change from moderate to excessive drug intake also indicates a change in the hedonic set range.<sup>31</sup> In severe clinical depression a downward movement in hedonic set range is indicated. Childhood adversity and trauma increases the likelihood of affective, anxiety and psychotic symptoms<sup>32</sup> and may be associated with permanent changes in the set point for

<sup>30</sup>Lucas, R.E., Clark, A.E., Georgellis, Y. and Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science*, 15(1), 8–13; Lucas, R.E., Clark, A.E., Georgellis, Y. and Diener, E. (2003). Reexamining adaptation and the set point model of happiness: Reactions to changes in marital status. *Journal of Personality and Social Psychology*, 84(3), 527.

<sup>31</sup>Ahmed, S.H. and Koob, G.F. (1998). Transition from moderate to excessive drug intake: Change in hedonic set point. *Science*, 282(5387), 298–300.

<sup>32</sup>Van Nierop, M., Viechtbauer, W., Gunther, N., Van Zelst, C., De Graaf, R., Ten Have, M., S. van Dorsselaer, S., Bak, M., Genetic Risk and Outcome of Psychosis (GROUP) investigators and van Winkel, R. (2015). Childhood trauma is associated with a specific admixture of affective, anxiety, and psychosis symptoms cutting across traditional diagnostic boundaries. *Psychological Medicine*, 45(6), 1277–1288; Anacker, C., O'Donnell, K.J. and Meaney, M.J. (2014). Early life adversity and the epigenetic programming of hypothalamic-pituitary-adrenal function. *Dialogues in Clinical Neuroscience*, 16(3), 321.

positive affect. These exceptions to the expectations of the *General Theory* are real and must be addressed in further analyses and investigations. The possibility of early adversity weakening resilience to traumas later in life is of particular interest in further studies.

In times of illness, Type II homeostasis supports coping systems and beneficial actions to help others. A person may be able to heal her/himself through activity, diet, rest or sleep, all pre-existing systems of Type II homeostasis tried and tested for millennia. The vast majority of people who recover from addictions do so without external help. In general, human beings are resilient and resourceful and can often manage to heal themselves of all ills. However, when self-directed help fails, the first ports of call are likely to be one's immediate family and friends and/or the huge array of 'apps' and web sites. Should these all fail, then multiple technological aids and services can be called upon, ranging from the simple: (1) scales for measuring body weight, (2) thermometers to measure body temperature, (3) heart pulse rate measurements, (4) blood pressure monitoring devices, (5) HbA1c test for Type 2 diabetes, to the more complex, (6) medical and surgical investigations and interventions, (7) pharmaceuticals, (8) mobility and ambulation aids, (9) life support systems (e.g. artificial respirators, drip feeding, kidney dialysis, intensive care units), (10) alternative and complementary therapies.

Access to psychological or 'talking' therapies to deal with anxiety, depression and stress is increasing in both state and private sectors. As we have seen, normally SWB has a fixed set range. However, SWB may fall below the set range for a temporary period (e.g. in winter) and then reset (e.g. in spring). Depending on the timing of the follow-up, placebo therapies for depression can seem as effective as active treatments, both pharmaceutical and psychological.<sup>33</sup>

There is a tendency for services to exaggerate their rates of cure and recovery, even those organized by state governments. For example, the UK government's *Improving Access to Psychological Therapies* (IAPT) programme, with close to 1 million people accessing IAPT services each year, claims rates of 33% for reliable improvement and 22% for reliable recovery.<sup>34</sup>

<sup>33</sup>Kirsch, I. and Sapirstein, G. (1998). Listening to Prozac but hearing placebo: A meta-analysis of antidepressant medication. *Prevention & Treatment*, 1(2), Article ID 2a; Kirsch, I., Deacon, B.J., Huedo-Medina, T.B., Scoboria, A., Moore, T.J. and Johnson, B.T. (2008). Initial severity and antidepressant benefits: A meta-analysis of data submitted to the Food and Drug Administration. *PLoS Medicine*, 5(2), e45.

<sup>34</sup>Clark, D.M., Canvin, L., Green, J., Layard, R., Pilling, S. and Janecka, M. (2017). Transparency about the outcomes of mental health services (IAPT approach): An analysis of public data. *The Lancet*, 391, 679–686.

However, an independent audit of a sample of IAPT clients showed a recovery rate of only 9.2%.<sup>35</sup>

'Positive psychologists' offer interventions that are claimed to raise levels of happiness and recovery from depression. However, a review of positive psychology claims in cancer care concluded that '*Claims ... routinely made in the positive psychology literature do not fit with available evidence*'.<sup>36</sup> Evaluations of positive psychology interventions reveal methodological issues, including significant publication bias, non-randomization, short-term effects (3–6 months post-intervention) and data from completers only, leading reviewers to conclude that '*Additional high-quality peer-reviewed studies in diverse (clinical) populations are needed to strengthen the evidence-base for positive psychology interventions*'.<sup>37</sup> Effect sizes are small to moderate and long-term evaluation is lacking. Without major structural changes, the expectations of the *General Theory* are that 'tinkering' with adult population SWB scores will not achieve significant reductions of stress, trauma and suffering over the long term.<sup>38</sup>

**Optimum Development Principle I:** Mounting evidence is providing support for Principle XIX (Programming) that the set ranges of homeostasis systems are programmed by genetics, epigenetics and early life experience (ELE). It is likely that the critical period for set range fixing is 0–24 months. All relevant areas of science should be applied with ever-increasing vigour to the strengthening of resilience and quality of life during the first 2 years (EQOL). When robust foundations for equitable resilience are in place, then the competence of all individuals to lead fulfilling and productive lives will be fully optimized.

**Optimum Development Principle II:** The immense value of education and literacy to improving and enriching lives is another target for 'Optimum Development'. There is strong evidence that IQ improvements over time can

<sup>35</sup>Scott, M.J. (2018). Improving Access to Psychological Therapies (IAPT): The need for radical reform. *Journal of Health Psychology*, February.

<sup>36</sup>Coyne, J.C. and Tennen, H. (2010). Positive psychology in cancer care: Bad science, exaggerated claims, and unproven medicine. *Annals of Behavioural Medicine*, 39(1), 16–26.

<sup>37</sup>Bolier, L., Haverman, M., Westerhof, G.J., Riper, H., Smit, F. and Bohlmeijer, E. (2013). Positive psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public Health*, 13(1), 119.

<sup>38</sup>The General Theory and Positive Psychology make rival predictions. Only attempts to falsify the two theories with well-controlled longitudinal studies will enable a final answer. I have taken a leap to produce a new theory, which is the easy, first step. Providing evidence to falsify the theory is the second, harder step. I hope somebody will give this a try.

be attributed to improvements in literacy<sup>39</sup> and education.<sup>40</sup> Large scale programmes to invest in improving EQOL, education and literacy of the general population have the potential to yield significant social and health benefits.

## CONCLUSION

1. If resilient foundations are in place, then subjective well-being is expected to remain positive and stable across the lifespan.
2. Following positive or adverse life events, subjective well-being (SWB) is expected to increase or decrease; however SWB normally resets within a few months or years.
3. Early developmental traumas, social traumas, severe clinical conditions and drug addictions are associated with a lowered hedonic set range that normally remains intransigent to intervention. Powerful preventive strategies are required to strengthen equitable resilience and quality of human development.

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<sup>39</sup>Marks, D.F. (2010). IQ variations across time, race, and nationality: An artifact of differences in literacy skills. *Psychological Reports*, 106(3), 643–664.

<sup>40</sup>Ritchie, S.J. and Tucker-Drob, E.M. (2017). How much does education improve intelligence? A meta-analysis. *Psychological Science*, 0956797618774253.