

Meaning, health and illness

By Tatjana Schnell, 2020

11.1 Can meaning in life improve your health?

Research findings suggest that the more meaning a person experiences, the healthier they are – both mentally and physically. Effect sizes range from small to moderate with regard to physical health and from moderate to large regarding mental health. Meaningfulness thus does not *guarantee* health. We should say instead that people who see meaning in their lives have a higher likelihood to be healthy. We can further claim that when people with high meaningfulness do become ill, they deal with it differently than people with a low sense of meaning. They suffer less from it, and often, the symptoms are much less pronounced.

As far as mental health is concerned, it has been shown that meaningful people are more hopeful and optimistic than people who see little meaning in their lives (Damásio, Koller, & Schnell, 2013). They experience themselves as more competent, more self-determined and better integrated socially (Kashdan & Breen, 2007). It is easier for them to accept their weaknesses and mistakes, in the sense of self-compassion (Vötter & Schnell, 2019). Their self-efficacy, resilience and self-regulation skills are also more pronounced. They are better able to activate, motivate and calm themselves, to direct their attention and to cope with failures (Hanfstingl, 2013; Sørensen et al., 2019). In addition, meaningfulness is accompanied by fewer psychological problems. It correlates negatively with neuroticism, depression, anxiety and the severity of posttraumatic stress disorders (Owens, Steger, Whitesell, & Herrera, 2009; Pedersen et al., 2018; Pinquart, 2002; Schnell, 2009). The magnitude of these effects is considerable, ranging from medium to large.

Nathan Lewis and colleagues (2017) investigated the relationship between meaning in life and cognitive functioning in Americans between the ages of 32 and 84. Their data showed that people with a high level of

meaningfulness fared better in performance tests. They had better scores on memory, problem-solving, decision-making and attention. Kim and colleagues (2019) confirmed this finding in a longitudinal study: In more than 11,000 Americans aged 50 and older, meaning in life predicted cognitive performance six years later. It proved to be an important protective factor against cognitive ageing.

Also with regard to physical health, meaning in life has been established as a crucial factor. A meta-analysis (Czekierda, Banik, Park, & Luszczynska, 2017) found moderate correlations between meaningfulness and objective health measures (such as availability of natural killer cells, heart rate, etc.) and medium correlations with subjective health measures (such as self-assessed health, symptom severity or perceived functional limitations). The effects were replicated not only in cross-sectional but also in experimental and longitudinal studies. This suggests that we can indeed assume that meaning contributes to health.

Here are some more-specific results: In Japan, a large prospective cohort study (over 43,000 people) was conducted, which in this case meant that members of a national health insurance scheme were interviewed over several years. One of the questions asked at the beginning was whether the participants felt that their lives were meaningful and worth living – whether they had *ikigai* in their lives. They could answer “yes,” “no” or “uncertain.” Those who initially affirmed a sense of meaning in life showed significantly better physical health, less pain and less impairment of physical functioning seven years later (Sone et al., 2008). A nationwide American study confirmed the connection between meaningfulness and self-assessed health and physical functioning (Krause, 2009). A smaller German study with older participants also found a positive relationship between meaningfulness and physical functioning (Wiesmann & Hannich, 2011). An American prospective longitudinal study showed that the risk of developing Alzheimer’s disease was significantly lower for people with a high level of meaning in life (Boyle, Buchman, Barnes, & Bennett, 2010). A more recent study with a similar design (Kim, Kawachi, Chen, & Kubzansky, 2017) showed that meaningfulness also predicted the mobility of older adults four years later. This was measured by walking speed and, as in all studies reported here, by controlling for other health-related conditions, such as marital status, education, income, health status, experienced stress, BMI, smoking, alcohol, exercise, sleep duration and medical history.

Several studies even discovered that risk of mortality is significantly lower for people with high meaning in life (Alimujiang et al., 2019; Boyle, Barnes, Buchman, & Bennett, 2009; Hill & Turiano, 2014;

Krause, 2009; Sone et al., 2008). This result was established in all age groups – that is, in adolescents as well as in middle and late age – and while controlling for other factors known to influence one’s risk of mortality. An American study found that high meaningfulness reduced general risk of mortality by 23 percent and reduced the risk of heart attack, stroke or need for bypass surgery or stent implantation by 19 percent (Mount Sinai Medical Center, 2015). Another American study, which examined nearly 7,000 adults aged 50 years and older for over four years, found a two-and-a-half times greater risk of mortality among those who reported very low meaningfulness compared to those who reported very high meaningfulness. For cardiovascular and blood diseases, the cause-specific mortality was 166 percent higher for those with low meaningfulness than those with high meaningfulness (Alimujiang et al., 2019). The Japanese study described earlier (Sone et al., 2008) found a 50 percent higher risk of mortality within the seven years studied for those with no meaning in life (*ikigai*). The risk of cardiovascular death and fatal stroke was 60 percent higher in both cases when meaning was absent, the cause-specific death from pneumonia was 80 percent higher, and the probability of dying from suicide was twice as high compared to people who had stated that they saw meaning in their lives. A meta-analysis from 2016, which systematically searched for studies that addressed the relationship between meaning in life, cardiovascular disease and mortality, confirmed the validity of the meaning effect (Cohen, Bavishi, & Rozanski, 2016): Across all studies, the probability of cardiovascular disease was 17 percent lower when meaning was present. Overall mortality was reduced by the same amount.

How can we explain these effects? Why should people who see meaning in their lives be psychologically and physically healthier and even live longer? There is evidence that meaning has a positive influence on our health in two ways: meaning motivates, and meaning moderates.

11.1.1 Meaning in life as a motivator

Aaron Antonovsky, the father of salutogenesis, has vividly demonstrated and justified the motivating power of meaningfulness. In the 1970s, he initiated a change of perspective in the social sciences: Instead of investigating disorders and their aetiology, Antonovsky explored the origins of health (1979). He was particularly interested in how people succeed in maintaining their health even when they experience severe stressors. He arrived at this perspective when he examined how women from different ethnic groups dealt with menopause. One of these groups was

born in Central Europe between 1914 and 1926. Antonovsky later wrote that he no longer really knew why, but he had asked them, among other things, whether they had been in a Nazi concentration camp. When he included the answer in his analyses, he found that 29 percent of the former internees had good mental health. This finding was a turning point for him: How was it possible to survive the Holocaust, to live as displaced people for years, to build up a new existence in Israel, where again wars were raging, and still be reasonably healthy? Through further studies, he came to the conclusion that it is a fundamental conviction that allows for a health-promoting way of coping with stress. He coined the term “sense of coherence” and described it as a fundamental trust in the comprehensibility, manageability and meaningfulness of one’s own life.

Comprehensibility means that we can understand and, to a certain extent, predict the events we encounter in the course of our lives, whether they originate in our inner world or the environment. When comprehensibility is low, we perceive internal and external stimuli as unexpected and disordered; they appear to be unexplainable or random. Of course, our perception of comprehensibility also affects how prepared we feel to cope with our lives. Manageability is the second component of Antonovsky’s sense of coherence. It is a person’s trust to have sufficient internal or external resources available to cope with demands. If it is low, we feel overwhelmed by life.

The third and, according to Antonovsky, most important component of the sense of coherence is meaningfulness. If we perceive our lives as meaningful, we also evaluate demands as worthwhile challenges. This implies a sense of significance: My actions matter; the requirements, problems and goals are worth the effort because they make sense; they have a meaning. The motivational function of meaning thus comes into view. Meaning motivates us to constructively deal with efforts and stressors. Without meaning, we rather perceive them as a burden, as impositions that we are not willing to face.

The three components of the sense of coherence are instructive for understanding human health behaviour. Only when we perceive our lives as meaningful are we at all willing to invest in life – even if it might be stressful. Health behaviour is one such effort. This includes specific conduct such as regular exercise, a balanced diet, sufficient sleep and exercising restraint with regard to luxury foods and potentially harmful substances. In general, health behaviour stands for a willingness to take responsibility for one’s own health (Wiesmann & Hannich, 2011; Wikler, 2002).

The perception of life as meaningful thus motivates us take responsibility for our health; we believe it is worth the effort and engagement (Antonovsky). The health-promoting function of meaningfulness can be illustrated by the hierarchic model of meaning (Figure 11.1). If meaningfulness is present, it motivates people to invest in health: one of the sources of meaning. This in turn suggests the pursuit of certain objectives, such as “increasing endurance,” “eating healthily,” “maintaining physical resilience” and so on. These goals result in corresponding actions (e.g. eating lots of fruit and vegetables, drinking little alcohol, not smoking), which in turn guide the evaluation and interpretation of perceived stimuli (e.g. the perceived attractiveness of healthy and unhealthy food).

Several empirical studies demonstrate the motivating function of meaningfulness. An American research group (Holahan, Holahan, & Suzuki, 2008) studied 130 cardiac outpatients undergoing treatment for coronary artery disease, myocardial infarction, angina, arrhythmias and other coronary problems. The researchers asked the patients for an

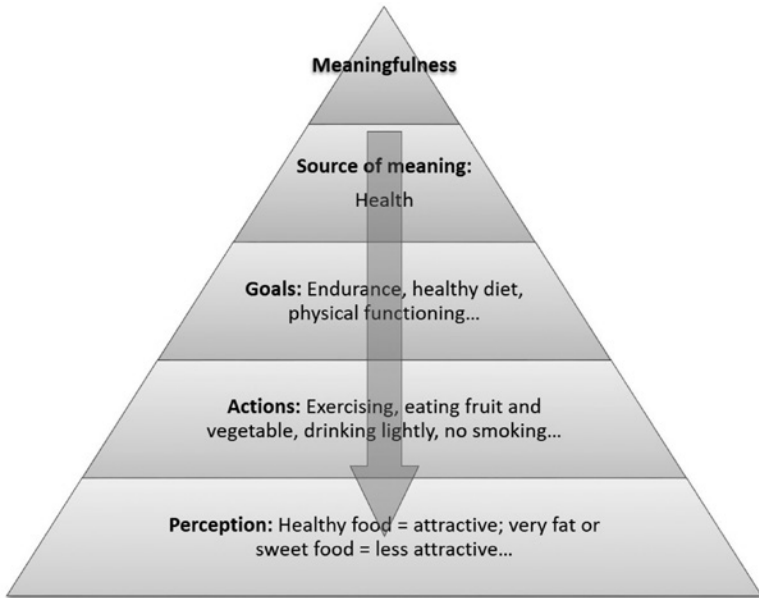


Figure 11.1 Meaningfulness motivates health-related behaviour in the hierarchic model of meaning

assessment of their own health and for information about their physical activity and purpose in life. It turned out that the more meaning the outpatients saw in their lives, the healthier they felt. The correlation was mediated by physical activity, indicating that meaningfulness motivated the patients to exercise regularly (they reported going for walks, doing routine housework, gardening and sports) and that these physical activities in turn contributed to their sense of health.

Another US study (Homan & Boyatzis, 2010) aimed to explore the reasons for older people to live healthy lives. They interviewed 160 senior Americans about their religiosity, meaningfulness and health behaviour. Meaningfulness turned out to be the most robust predictor of health behaviour. A high level of meaningfulness apparently motivated people to be physically active, take responsibility for their health and manage stress constructively. German researchers conducted a similar study to investigate older people's motives to live healthy lives. They consulted 170 adults who were 67 years, on average. To assess healthy living, they asked whether the respondents paid attention to their personal hygiene, went to the doctor regularly, ate a healthy diet, got sufficient exercise and relaxation, slept enough and demonstrated responsibility in dealing with alcohol, nicotine and drugs, in road traffic and in sexual intercourse. Again, the data showed meaningfulness to be the strongest predictor of health behaviour. It exceeded various measures of physical well-being and self-esteem (Wiesmann & Hannich, 2011).

The finding was confirmed again in a Romanian longitudinal study, but this time with young people (Brassai, Piko, & Steger, 2015). Researchers investigated the health behaviour of almost 500 schoolchildren in Romania at two different points in time, with the second survey taking place 13 months after the first. The respondents provided information about their eating habits, physical activity and perceived meaning in life. Meaningfulness at the first time of measurement predicted health behaviour one year later – even better than well-being or the importance given to health at the first point of measurement.

In another longitudinal study, by Kim, Strecher, and Ryff (2014), the observed time span was six years. The authors examined a representative sample of over 7,000 Americans who were 50 years or older. Monitoring a large number of possible influencing factors, the reported meaning in life at the first measurement could predict whether the participants would undergo cholesterol tests, colonoscopy, mammograms or prostate examinations six years later. The number of hospital stays was also significantly lower among those who had reported a high meaningfulness six years earlier.

The studies show that people are more likely to behave in a health-conscious way if they see meaning in their lives. Meaningfulness motivates people not to be negligent with their health but instead to take responsibility for their well-being. Life seems valuable enough to accept restrictions or efforts in return. The specific consequences of such behaviour are better physical and mental health, fewer functional limitations in old age and a longer life. In addition to the motivating function of meaning in life, a moderating function has been observed, which plays an important role in maintaining and regaining health.

11.1.2 Meaning in life as a moderator

A moderator is a regulator. It affects the relationship between two other variables, by reducing or strengthening it (Figure 11.2).

Various studies have shown that personal meaningfulness has an influence on the consequences of stressors (Boyle et al., 2012; Krause, 2007; Park, Edmondson, Fenster, & Blank, 2008). Stressors are all those events that can lead to psychological or physical suffering. These include everyday hassles as well as traumatic events like a separation, an accident or a serious illness. Such events can be destructive, interrupt life and cause great suffering. However, if a person is strengthened by the presence of meaning in life, then suffering is less serious in most cases. The existential foundation can prevent a loss of perspectives and goals. People can deal with the stressor more constructively, which also goes hand in hand with better coping. Meaning therefore acts like a “stress buffer.” Let’s look at some examples of the buffering effect of meaning in life

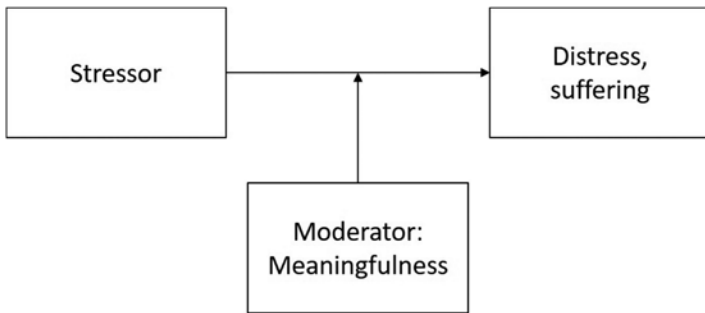


Figure 11.2 Meaning in life as a moderator of the relationship between stressor and experienced distress

An American longitudinal study (The Rush Memory and Aging Project; Bennett et al., 2005) examined the health course of the ageing population, with a special focus on Alzheimer's disease. More than 1,000 people participated annually in interviews and clinical and psychological tests, including questions on meaning in life. This benefited the participants, who received up-to-date information on their health status, and it benefited the researchers. A large number of patients also agreed to an autopsy after death, which meant an additional gain in knowledge for the researchers. Patricia Boyle and colleagues (2012) investigated 246 cases, including autopsies. They found higher levels of meaning to reduce the deleterious effects of Alzheimer's disease on cognitive function. When patients had reported high meaningfulness, their cognitive performance declined much more slowly than it did in people with low meaningfulness. The authors interpret the findings as indicating that meaning in life contributes to building up "neuronal reserve," which allows people to function better despite the presence of pathological changes like amyloid and tangles. Here the buffer function of meaning in life may arise from meaningfulness being accompanied by a goal and action orientation that trains resistance and thus increases the strength and efficiency of the nervous system (Boyle et al., 2012).

Another study from the US provided further evidence of the stress-buffering function of meaning in life in the – perhaps somewhat surprising – context of knee surgery (Smith & Zautra, 2000). The authors examined elderly patients who were given a knee joint replacement due to arthrosis. After such an operation, pain and functional limitations may still occur for several months afterwards. Six months after the surgery in Smith and Zautra's study, those patients who had reported low meaningfulness before the operation especially suffered from pain and limitations. Patients with high preoperative meaningfulness had improved both psychologically and physically six months later.

Neil Krause has documented the stress-buffering function of meaning in life in consequences of severe trauma (2007). He asked over 1,000 Americans whether they had experienced trauma in the course of their lives, defined as "exceptionally terrible, deeply disturbing events" (p. 794) such as the death of a life partner or child, natural disasters, fatal or near-fatal illnesses and accidents, fighting or sexual abuse. In addition, he assessed momentary meaningfulness and the extent of depressive symptoms. In line with the hypothesis, traumatised people whose meaningfulness was high reported significantly fewer depressive symptoms than participants with low meaningfulness. This, according to Krause, suggests that meaning in life can compensate for the destructive

consequences of experienced traumas. This assumption is supported by a recent study of 1,119 Mississippi coastal residents affected by the Deep-water Horizon disaster (also known as the Gulf oil spill). For many of the residents, the drilling rig explosion and subsequent oil spill caused financial, social and/or health problems. More than one-third of the sample experienced posttraumatic stress disorder (PTSD). In this context, too, the perception of life as meaningful proved to be an important buffer: Those who reported meaningfulness were significantly less affected by posttraumatic stress symptoms (Aiena, Buchanan, Smith, & Schulenberg, 2016).

Many studies have investigated connections between meaning in life and mental suffering in cancer patients. Cancer is also regarded as a trauma, because it interrupts the course of life in a disturbing and dangerous way. Those who are affected are burdened with physical symptoms and the side effects of treatments, but in many cases, they also have depression, anxiety and a multitude of other negative feelings and moods. A team of researchers compared 62 studies on meaning in life and the mental suffering of cancer patients in a meta-analysis (Winger, Adams, & Mosher, 2016). Overall, the results confirmed that the mental suffering of cancer patients is less pronounced when they perceive their lives as meaningful. The buffer effect of meaningfulness was thus again confirmed

Findings suggest that meaningfulness can directly reduce or compensate for negative experiences. Moreover, there is evidence that meaningfulness reduces the burden of rumination. When negative events occur, we usually ask questions like “Why me?” and “Why did this happen to me?” We search for a specific meaning of the incident. This search, however, is not productive and often represents an additional burden (Park, 2010; Park et al., 2008). Instead, it is more important to view life as meaningful per se, in spite of – or including – suffering. This overall sense of meaning provides a stable existential foundation, a foothold from which we can deal with events even without attributing specific meaning to them. This is different, however, if a person’s meaning in life is based on positive illusions: unrealistically favourable attitudes that people have towards themselves or the world (Section 8.5). Such illusions include the belief in a just world, the above-average effect, unrealistic optimism and the illusion of control. These assumptions are jeopardised by negative events, and people whose meaning hinges on their veracity tend to search for meaning in specific event – mostly unsuccessfully.

Another potentially harmful belief is connected with a specific type of instrumental-reciprocal religiosity. Such a – rather widespread – faith is

based on the principle of reciprocity: “do ut des” (Latin for “I give, so that you give”) (Streib, 1997). Here the following assumption prevails: Whoever follows religious rules and commandments is rewarded for it – such as by a happy, healthy and prosperous life. When a negative event occurs, believers are motivated to seek the cause in their own misconduct and thus find meaning in the event

However, the matter is complex and great care should be taken in practice. Searching for meaning in negative events cannot simply be dismissed as obstructive. Several studies show that the *search* for meaning in an illness, an accident or other critical events tends to have negative effects. At the same time, it is known that *finding* such meaning can be beneficial. Those who “succeed” in finding a meaning in cancer can actually deal with it better; in many cases, it even leads to an increase in quality of life. This phenomenon of posttraumatic growth is described in more detail in Section 11.4. It is therefore not a question of preventing the attribution of meaning. Rather, only the unsuccessful search for it has a destructive effect. The psychotherapist Elmar Reuter, who has been working in psycho-oncology for several decades, advises people to be patient when questions about the cause of their own illness arise:

Things are not easy. It is not about getting immediate answers, it is about the process of regaining control, gradually regaining security. The process of asking questions should be seen as a struggle to move from initial helplessness to more inner security.

(Reuter, 2010, p. 28; transl. TS)

In summary, we can say that an existing meaning in life acts as a buffer against the negative consequences of stressors. A stable existential foundation can prevent our life from becoming dominated by a disease, injury or other limitation. In addition to motivating health behaviour, meaningfulness also has a moderating function: It reduces or averts the negative consequences of stressors. But how can this happen? What are the paths that run from the abstract construct of meaning in life to our mental and physical health?

11.2 From mind to body

Various biological systems are responsible for our health. These include the immune system, the cardiovascular system (heart and blood vessels) and the neuroendocrine system (pituitary glands, parathyroid gland, adrenal medulla, etc.) They determine whether and how quickly we fall

ill, how fast we recover and how well our body functions. There is clear evidence that a meaningful life is related to the effective functioning of these systems. The most important findings to date are presented here

11.2.1 Meaning in life and biomarkers

In a sample of older women, Carol Ryff and colleagues found that with regard to several biomarkers, those with higher meaningfulness differed significantly from those with lower meaningfulness (Ryff, Singer, & Dienberg Love, 2004). Participants who saw meaning in their lives produced less cortisol, both after getting up and throughout the day. (High cortisol levels in the morning and throughout the day are considered indicators of chronic stress.) In addition, fewer pro-inflammatory cytokines (interleukin 6) were detected, which, when present, indicate chronic inflammatory processes. The risk for cardiovascular diseases was lower among women who reported meaning, which was expressed in a better waist–hip ratio and in higher HDL cholesterol values. (The high-density lipoprotein is considered “good” cholesterol because it is a protective factor against cardiovascular diseases.) Last but not least, a calmer and thus more effective sleep pattern could be demonstrated in participants with higher meaning.

A different study design was used to examine how socioeconomic status and health are related in older women and whether meaningfulness might play a moderating (regulating) role. As a health indicator, the American research team (Tsenkova, Love, Singer, & Ryff, 2007) used glycosylated haemoglobin (HbA1c). HbA1c – colloquially known as long-term blood sugar – is an important indicator of the course of type 1 and type 2 diabetes. Moreover, HbA1c has been shown to be informative for non-diabetics’ health. According to epidemiological studies, a small increase in non-diabetic HbA1c is associated with a multiple increase in risk of cardiovascular disease and general mortality (Tsenkova et al., 2007). As the researchers had expected, household income was inversely related to HbA1c levels: The less money available, the more critical the health score. And again, the moderating function of meaning in life was confirmed. Women with a low household income but a high sense of purpose achieved similarly good scores as more financially solvent women. Apparently, meaningfulness compensated for the negative effects of low income. A lack of meaning, on the other hand, even led to an increase in the negative effects of low income

A moderating (regulating) function of meaningfulness has also been demonstrated for the relationship between chronic diseases in old age and

inflammation markers (interleukin 6 and C-reactive protein) (Friedman & Ryff, 2012). Many older people have multiple chronic disorders such as hypertension, arthritis, asthma, diabetes, autoimmune diseases and so on. These lead to further inflammatory processes, which are associated with additional functional limitations. In the national sample examined by Friedman and Ryff, multiply-affected participants who reported meaning in life had significantly lower levels of inflammatory processes than would have been expected, given the co-morbidity. This suggests that meaning in life does not necessarily prevent disorders but it mitigates their negative effects

Another group of researchers (Zilioli, Slatcher, Ong, & Gruenewald, 2015) studied a subset of the previously described national sample. These participants had been willing – ten years after the first survey – to again undergo a detailed examination. Just under 1,000 people had their complete medical history taken. In addition, researchers collected blood, urine and saliva samples and assessed various cardiovascular parameters. For this specific study, the authors broadened the perspective from the observation of individual diseases and health parameters to the assessment of allostatic load. Allostatic load refers to the physiological consequences of cumulative physiological stress that the body endures when it is repeatedly or persistently adapting to the demands of the environment. The term “allostasis” refers to the changes that the cardiovascular, autonomic, neuroendocrine, immunological and metabolic systems undergo in stressful situations. Too long or too frequent cycles of allostasis make us biologically “fragile” – in other words, allostatically stressed. This stress, in turn, is associated with a higher risk of disease, cognitive decline and mortality (Seeman, McEwen, Rowe, & Singer, 2001; Seeman et al., 2004).

When analysing the data, Zilioli and his team also discovered the expected role of meaning: People who had reported high meaning in life at the first measurement showed a significantly lower allostatic load ten years later. In addition, these people were also more convinced that they could influence their health. This conviction, in turn, was associated with lower allostatic stress. It “mediated” the connection between meaningfulness and allostatic biomarkers. The finding highlights the importance of “manageability” according to Antonovsky (Section 11.1.1) – that is, the assumption that we can take care of things that are important to us: High meaningfulness seems to strengthen our trust that we can contribute to our health; given its motivating function, meaningfulness also influences our actual attempts to live healthily, thus increasing our sense of manageability with regard to health. This in turn appears to be an important link to regulate and maintain our physical health.

A good example of how people with high meaning in life regulate their allostatic load was documented in an experimental study by Fogelmann and Canli (2015). They exposed 44 elderly Americans to the Trier Social Stress Test, in which participants have to complete two tasks in front of two cameras and a jury of two people in white coats. First, they have to deliver a free five-minute speech concerning their suitability for employment in a mock job interview; then the task is to count backwards in steps of 17 from a high number of thousands. The procedure reliably ensures that physical stress reactions occur. Fogelmann and Canli now found that study participants with high meaning in life had a normal stress reaction – but that they recovered faster than others. Such accelerated stress reduction decreases the allostatic load. Again, it indicates that having meaning in life helps to better deal with stressors.

11.2.2 Social genomics: meaning in life and gene expression

The relatively new research area of social genomics is based on findings that show that our genes do not have a constant state of activity but are switched on or off by certain environmental conditions. Importantly, it is not the conditions themselves that have predictable genetic consequences but rather how we perceive them. This is where our view of ourselves and the world comes into play, which differs in many ways between people with high meaningfulness and people with low meaningfulness (see also the hierarchic model of meaning in Section 4.1).

The social geneticist Steven Cole (2014, 2019) demonstrated in his studies how stress perception is reflected in the genes. There is ample evidence that subjective experiences of social stress upregulate systemic inflammatory processes, which have destructive effects on health. The result is known as conserved transcriptional response to adversity (CTRA). It is a typical profile of “switched-on” genes that becomes active as a result of stress. Specifically, the CTRA profile implies an increased expression of pro-inflammatory genes and a decreased expression of genes related to the innate antiviral response and antibody synthesis. In other words, inflammation is promoted and the immune response to viruses and the synthesis of antibodies is reduced.

Of course, such a genetic profile does not exist without reason. It prepares the body to deal with wounds and bacterial infections. Inflammatory processes are responsible for keeping pathogens in check, rejecting damaged tissue and carrying out repairs. For our ancestors, these processes were vital, but under current conditions, the CTRA gene profile

appears to be activated to an excessive degree. Alarming, CTRA profiles are found more often in people with low socioeconomic status, in mourning people, caring relatives, people with PTSD and those who have been diagnosed with cancer (Cole, 2014). All these situations have in common that they can easily be perceived as uncontrollable stressors. They exert a strong influence on life, and it is difficult to escape them. Chronic stress results, which – mediated by CTRA gene expression – promotes the development of other disorders, such as cardiovascular diseases, Alzheimer's disease, type 2 diabetes and metastatic cancers. At the same time, the body's defences against viral infectious diseases are reduced (Cole, 2014).

Steven Cole, Californian researcher Barbara Fredrickson and colleagues (Fredrickson et al., 2013, 2015) have successfully demonstrated that meaning in life can inhibit CTRA gene expression. Given the findings that chronic stress – mediated by gene expression – impairs health, the research team assumed that high well-being should have positive effects on health, also mediated by gene expression. According to the current state of research, they distinguished between eudaimonic and hedonic well-being (Section 10.1). The results were partly quite surprising given that they did not confirm the assumption of positive psychology that positive feelings are beneficial to health. Hedonic well-being (positive mood and satisfaction with life) was *not* systematically related to CTRA. Eudaimonic well-being (purpose in life, personal growth, generativity), on the other hand, was associated with reduced CTRA gene expression (Fredrickson et al., 2013). In the analysis of individual subscales, purpose in life proved to be a relevant antagonist of CTRA gene expression, along with self-acceptance, environmental mastery, autonomy and positive relationships (Fredrickson et al., 2015).

In 2017, Nelson-Coffey and colleagues investigated a similar question in a controlled randomised study. They wanted to know if CTRA gene expression would be affected if over a period of four weeks, participants did something good for themselves (e.g., pampered themselves, practised a hobby), did something good for others (e.g., invited somebody for coffee, lightened somebody's workload) or did something that would benefit the world in general (e.g., picked up garbage, donated money). As was to be expected from previous studies, the hedonistic task – doing good for oneself – had no effect on gene expression. Also, becoming active for the world in general had no effect. But when others benefited directly from the good deed, improvements in the leukocyte expression of CTRA indicator genes were observed. It thus seems to be relevant

for our health to actually experience the (positive) consequences of our deeds.

This finding confirms the crucial role of “significance” in meaning (see Section 2.3.2). It also reflects another insight that I gained from numerous case studies: Volunteers who spend time working for rather abstract and long-term goals such as social justice or climate change are often more exhausted than people who directly contribute to the well-being of others through their actions (and thus receive immediate feedback on the significance of their work). A society that relies on individuals and groups committing themselves to long-term goals should therefore support them in the best possible way, both ideally and materially (see also Schickedanz, 2018).

11.2.3 More meaning, less inflammatory processes

Summarising the various findings, meaning in life appears to cushion the effects of stress on biological systems by limiting inflammatory processes. Contemporary medicine has established connections between chronic inflammation and many diseases, such as autoimmune diseases of the central nervous system (such as multiple sclerosis) and neurodegenerative diseases such as Alzheimer’s and Parkinson’s (Kaplin & Anzaldi, 2015). Inflammation is caused by the activity of the immune system – and in principle, this is a good thing. As a weapon of the body’s own defence system, inflammation fights infections and contributes to wound healing. However, our immune system not only becomes active when it encounters pathogens that invade the body but also reacts to psychosocial stress – the Trier Social Stress Test is a good example. Our brain (especially the hypothalamus and pituitary gland) signals to the adrenal gland that a stressor is present, whereupon the latter releases the stress hormone cortisol. This suppresses the immune system, but only for a short time. When we endure psychosocial stress for a longer period of time, such as from ongoing professional overload, separation anxiety, financial worries or loneliness, the immune system no longer reacts so sensitively to cortisol. Instead, it becomes even more active and thus produces persistent, often silent inflammations that cause or aggravate diseases.

Some of the studies presented earlier are directly related to inflammatory markers such as interleukin 6, C-reactive protein and the upregulation of pro-inflammatory genes. When we look at other biological markers that are related to meaning in life (Section 11.2.1), associations with inflammatory processes can also be detected here: Daily

profiles of cortisol release are positively correlated with inflammatory processes (and are considered to be reactions to psychosocial stressors; DeSantis et al., 2012). The waist–hip ratio is considered an indicator of overweight and obesity associated with subclinical inflammatory processes (Visser, Bouter, McQuillan, Wener, & Harris, 1999). HDL cholesterol – the high-density lipoprotein – has anti-inflammatory properties. By activating a transcriptional regulator (ATF3), HDL cholesterol is responsible for the downregulation of inflammatory gene expression; it thus protects against persistent inflammation (De Nardo et al., 2014). Sleep disorders and resulting sleep deprivation are associated with increased levels of pro-inflammatory cytokines and C-reactive protein (Simpson & Dinges, 2007). The blood glucose level HbA1c is related to subclinical inflammation too (Temelkova-Kurktschiev et al., 2002). One review article (Rohleder, 2014) concludes that people with low meaning in life are particularly likely to respond to stress with inflammatory stress reactions.

The data suggest the following explanation: According to Lazarus and Folkman's (1984) groundbreaking stress theory, events can be appraised as threats, losses or challenges. When we perceive a stressor as an uncontrollable threat or a loss that has already occurred, genes are activated that put the body into a state of defence and cause inflammatory processes. At the same time, there is an increased release of the stress hormone cortisol. Also, sleep disorders occur more frequently, which triggers additional inflammatory processes. Low motivation and/or a lack of internal resources can limit the willingness to exercise and eat healthily. Resulting overweight leads to further inflammatory reactions, and with a reduction in HDL cholesterol, an important anti-inflammatory factor is eliminated.

If, on the other hand, stressors are regarded as worthwhile and manageable challenges – to which the moderating and motivating functions of meaningfulness contribute significantly – then the dangerous inflammatory processes are more likely to be absent. Without their threatening character, stressors do not elicit a defensive reaction of the body, such as CTRA gene expression. Finally, meaningfulness prevents a loss of perspective. Instead of directing all attention to the stressors experienced as threatening, they are put into perspective: "I am not determined by being a cancer patient/unemployed person/abuse survivor/widow." The availability of various sources of meaning – including selfactualisation; well-being and relatedness; order and selftranscendence – can compensate for limitations. This way, we can realise that there is a lot of life worth living besides the challenging stressors.

11.3 “I can’t go on!” Crises of meaning prevent recovery

Meaningfulness affects health by motivating healthy behaviour and by moderating the influence of stressors. The observed effects are usually of medium size. This indicates that there must be other important influences, such as self-acceptance, environmental mastery and positive relationships. The situation is different for crises of meaning. Here we find drastic effects, indicating that when there is a crisis of meaning, life energy dwindles – and thus, health suffers

As described in Chapter 8, a crisis of meaning is a painful state of affairs. During a crisis of meaning, feelings of happiness, joy, curiosity and satisfaction are almost impossible. Trust in one’s own strengths diminishes; internal and external demands can hardly be dealt with. With the loss of such resources, the occurrence of depression, anxiety and suicidal tendencies becomes more likely (Damásio et al., 2013; Schnell, 2009; Schnell, Gerstner, & Krampe, 2018; Sørensen et al., 2019; Wood & Joseph, 2010). A crisis of meaning often occurs as a result of a severe stressor, and it can prevent constructive coping. It therefore has a mediating function.

11.3.1 Mediating desperation

A mediator is a go-between – in everyday life and in statistics. Mediators explain why two variables, for example a stressor and drug use, are related. The principle is illustrated in Figure 11.3: The mediator, here a crisis of meaning, is a consequence of the stressor and evokes the next

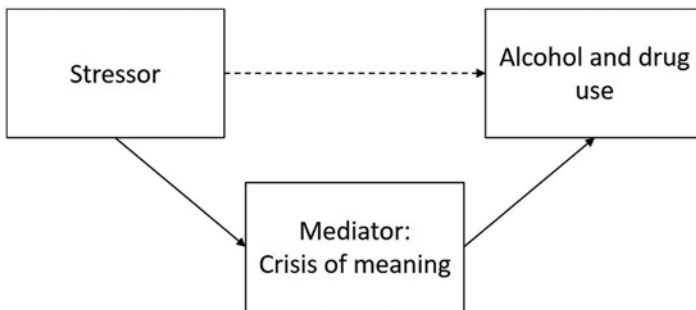


Figure 11.3 Crisis of meaning as a mediator between stressor and alcohol and drug use

characteristic, in this case the use of alcohol and drugs. The mediator crisis of meaning thus explains why there is a connection between the stressor and the use of alcohol and drugs.

The mediation shown in Figure 11.3 illustrates the result of a study by Lisa Harlow, Michael Newcomb, and Peter Bentler (1986). Their aim was to explore why, and under which conditions, young people consume alcohol and drugs. Their assumption was that both alcohol and drugs are used to cope with stress, especially when the stressors are experienced as uncontrollable. This might be the case when children or adolescents are exposed to their parents' separation; when their family is undergoing financial difficulties accidents, serious illness or death; or when a relocation with a change of school is unavoidable. In such cases, Harlow and colleagues postulated that some young people experience a loss of control that could result in a crisis of meaning. This in turn could lead to increased alcohol and drug use. In fact, two mediators were assumed here: loss of control and crisis of meaning. In a cross-sectional study with almost 400 students, the hypothesis was clearly confirmed: When participants experienced stressors resulting in a loss of control and then a crisis of meaning, they reported more frequent use of alcohol and drugs. In a subsequent longitudinal study, crisis of meaning also explained alcohol and drug consumption four years later.

The study shows that it is not the stressor per se that leads to self-damaging behaviour or other forms of mental suffering. Problems occur when the stressor cannot be understood and mastered as a worthwhile challenge but instead is perceived as a severe threat or a loss that has already occurred (see also Section 11.2.3). Appraisals of stressors as threats or losses suggest a loss of control: When believing that our competences and resources are insufficient to successfully avert a threat, we experience helplessness. When we perceive a stressor as an irrevocable loss, our ability to act seems to be limited. Both appraisals can jeopardise a previously valid sense of meaning and cause a critical situation of meaning lost, which in turn prompts suffering and, under certain circumstances, self-damaging behaviour.

The researchers Heather Jim and Barbara Andersen (2007) have found a mediating function of crisis of meaning also among cancer patients. The authors were particularly interested in how patients dealt with physical and social limitations typical of cancer. Physical limitations include disease symptoms and side effects of treatments, such as nausea, pain, fatigue, cognitive impairment and sexual dysfunction. Also, the interruption of daily activities due to such complaints counts as a physical limitation. Moreover, social restrictions occur. People who are often tired or

experience pain or nausea easily fall out of the social fabric. The network of social relationships shrinks, and the number of interpersonal contacts decreases. In some cases, entire role identities are lost, such as when it is no longer possible to pursue one's professional activity or when physical ailments preclude voluntary work or certain hobbies. All these are social limitations.

Hence, cancer is a traumatic, disturbing and on many levels limiting event. It is therefore not surprising that cancer patients often develop depression, anxiety and negative moods such as anger, rage, nervousness and tension. Nevertheless, such mental suffering is not a necessary consequence of cancer. Some patients are much better off than others. Jim and Andersen wanted to know what this depends on. They assumed that the cause of suffering might be found in physical and social limitations. But they also posited that it was not the restrictions themselves that were causing the suffering. Rather, it should be a question of how the limitations are built into one's life. Are they perceived as a challenge that can be overcome or as a threat or loss? If the latter is the case, the researchers postulated, then the personal meaning system is shaken. A crisis of meaning arises, which in turn leads to mental suffering

The data confirmed this assumption, both in a cross-sectional survey and in a longitudinal survey. For many of the cancer patients, physical and social limitations led to a crisis of meaning, which in turn was responsible for mental suffering. We can thus conclude that a breakdown in personal meaning causes a lot of additional suffering, beyond the inevitable consequences of illness and other severe stressors. Those who work in healthcare professions are therefore well advised to develop a sensitivity for this dimension of human experience, which lies beyond the biopsychosocial model. Even with appropriate medication, self-confidence and a tight social network, a loss of meaning can prevent healing and lead to suffering

11.3.2 Existential despair at the end of life

This problem is particularly striking in the context of incurable diseases. The psychiatrist William Breitbart has in his work with terminally ill people, especially cancer and HIV patients, come across a phenomenon that he describes as "despair at the end of life." It is a syndrome of hopelessness, suicidal thoughts and desire for hastened death (Breitbart et al., 2000, 2015). Such "despair at the end of life" occurs repeatedly in patients who are confronted with the fact that their disease is incurable

and the end of their life is foreseeable. While some take the news calmly, settle their legacies and prepare to die in peace, others show signs of despair, expressing their desire to die soon and possibly asking for euthanasia. Breitbart describes his experiences as follows:

Close to 20%–25% of the patients whom I was seeing were people in great despair who wanted to die, and who wanted their death hastened. Although not all of them were asking their doctors to assist them specifically by giving a prescription or euthanizing them, they wanted to die fast. They could not deal with the suffering, and saw no meaning or value in living.

(Breitbart & Heller, 2003, p. 979 f.)

Breitbart initially assumed that these were depressive symptoms. He focused his attention on correctly diagnosing and treating depression in the final stages of life. In the process, he notes, he came across some common misconceptions. One is the assumption that it is “normal” for people who have only four to eight weeks to live to be depressed. In fact, he and his colleagues found a depression rate of only 17 percent in a sample of people who had on average one month to live. A second misconception is that depression cannot be effectively treated in the last weeks of life. Breitbart contradicts this and explains that there are various drugs available that can lift the mood and vitality of the patients. Such measures are just as important as the alleviation of physical symptoms, emphasises Breitbart, since those affected perceive mental suffering as at least as painful.

However, the syndrome of despair at the end of life could not be attributed to depression. Apparently, it is a phenomenon that can occur in addition to depression or independently of it, and it makes the last phase of life immensely difficult. After further investigation, Breitbart and his team identified a critical lack of meaning as the cause of despair at the end of life: To those affected, their entire life seemed meaningless. Consequently, they saw no meaning in structuring the few remaining weeks or months or even in living them consciously.

It is a potentially bleak scenario that is unfolding here. If at the end of life, we look back and judge our life as inadequate or unacceptable, there is no time for corrections. And yet the “final chapter” still holds many possibilities, says Breitbart. Whether restricted in movement or because of pain – as long as a person is conscious, they can grow spiritually. This is why Breitbart is committed to palliative medicine and care that goes beyond the goals of support and guidance. He would like to see more

help for dying people to accept their life and – as a consequence – their death.

Many suggest such a goal of care is not achievable by all and perhaps inappropriate for many. I would suggest that tasks of life completion are achievable and essential at this phase of life. Acknowledging or facing death (i.e., the finiteness of life) is the impetus for transformation. Facing death forces us to turn around and face life – the life one has lived. . . . It allows for realization that the last chapter of one’s life is the last opportunity to live to one’s full potential, to leave behind an authentic legacy, to connect with the beyond, and to transcend life as we know it. . . . The paradox of the end-of-life dynamic is that through acceptance of the life one has lived comes acceptance of death. The lessons of the dying can inform the living of the value of life.

(Breitbart, 2015)

The crisis of meaning here is the reaction to the announcement of imminent death. It is accompanied by a “devaluation” of life, which is perceived as meaningless and something that the patient wants to be “overcome” as quickly as possible. Hopelessness, suicidal thoughts and the desire for hastened death are in the foreground. This prevents a conscious confrontation with life and with death. William Breitbart acted on this knowledge by developing an intervention to strengthen meaning in terminally ill patients. The procedure is presented in Chapter 12.

11.3.3 Crises of meaning are not clinical depression

From the outside, depression and crisis of meaning are easily confused. A sad, depressed mood prevails in both. Nevertheless, they are different phenomena. In a study of 318 students in Ecuador aged 16–18 years (Schnell et al., 2018), we found that 82 percent of those who met the criteria for clinical depression also experienced a crisis of meaning. However, when we looked at all those who reported a crisis of meaning, we found increased depression rates in only 35 percent. We can conclude that a crisis of meaning is a common component of depression – but that many crises of meaning occur without clinical depression.

In another study, we investigated whether crises of meaning were correlated with specific symptoms of clinical depression. Surprisingly, there were no systematic associations. Instead, we found a link between crises of meaning and increased symptoms related to anxiety: People

dealing with a crisis of meaning reported feelings of tension and worry (Schnell, in preparation). However, tension and worry do not yet constitute a mental disorder, even if they are pronounced. Mental disorders are considered “expressions of dysfunctional psychological, biological or developmental processes” (Falkai & Wittchen, 2015, p. 26; transl. TS). But what is “dysfunctional”? In the German dictionary (Duden, 2019), dysfunctional means “detrimental to an effect.” Synonyms are “impractical” and “unfunctional.” It remains open which effect, which function, is aimed at. Psychology and psychiatry in this respect are oriented towards what is “normal,” what the majority of society thinks, experiences, does. In many cases, however, people in a crisis of meaning experience precisely this: What is considered normal, what everyone does, suddenly becomes questionable. They are thus in agreement with a remarkable sentence attributed to Mark Twain: Whenever you find yourself on the side of the majority, it is time to reform (or pause and reflect)

11.3.4 Crisis of meaning and suicidality

Falling out of familiar, “normal” references and functions can be stressful. A crisis of meaning disillusion; it calls into question what has previously served as basis of existence; it deprives everyday life of meaning. This is accompanied by a feeling of isolation and solitude (see Chapter 8). Thoughts of suicide are a common consequence. In our study of Ecuadorian adolescents (Schnell et al., 2018), we also examined the connection between crisis of meaning and suicidal tendencies. Suicidality is understood to be a way of thinking, experiencing and acting that strives for or accepts one’s death. In this context, hopelessness and lack of perspective prevail (see e.g. Wolfersdorf, 2012). Certain factors can further promote a desire to die by suicide, such as low self-esteem, lack of social integration and the burden of critical life events. We have controlled these characteristics in our study and found that crises of meaning were as closely linked to suicidal tendencies as depression was. For male adolescents, they were an even-more-important predictor of suicidal tendencies than for young women. The results show that in suicide prevention, it might be vital to go beyond the diagnosis of depression.

11.4 Posttraumatic growth

Life asks a lot of us. Death, accidents, illness and violence are traumatic events that can hurt us emotionally, destroy our existential foundation, lead to crises of meaning and thus take away our will to live. And yet

there are also quite different developments that follow life crises. Many people succeed in coping with stressful life events and thereby grow psychologically. The term “posttraumatic growth” emphasises that those affected not only recover from trauma but also use it as an opportunity for further personal development. The pioneers of research on posttraumatic growth, Richard Tedeschi and Lawrence Calhoun, illustrate the phenomenon by using an earthquake metaphor: Trauma shakes fundamental assumptions about ourselves and the world. If we succeed in adapting our own psychological reality to the new situation, posttraumatic growth can happen. In the process, a new worldview is created that is more mature, robust and in tune with reality than the previous one, thus bringing new strength (Calhoun & Tedeschi, 2014). The following quotation illustrates this from the perspective of a person who has survived cancer:

I have had the opportunity to gain so many positive experiences: with myself; my thinking; my inner strength to deal with crises. I have also had many positive experiences with my fellow human beings, with my family. You only notice this when you are in need; how many people stand by me. I notice that I approach my studies and education in a much more mature way. Maybe I needed the disease. I go so far as to say that I am grateful for the illness. Perhaps it doesn't have to be this illness, but the process, the crisis-like experience and what then happened to me and around me has made me more mature, more human in a deeper sense.

(Thomas K., in Reuter, 2010, p. 16; transl. TS)

Posttraumatic growth can affect different areas of life. Research has identified five changes that are frequently mentioned, but they do not always occur simultaneously (Calhoun & Tedeschi, 2014):

- 1 A more intense appreciation of one's own life: Those affected state that they have a new view of what is essential in life. They are aware of the finiteness of their life, which makes life more valuable. They also perceive the “little things in life” more consciously and appreciatively, such as the sunrise, the embrace of a child or the beauty of a flower.
- 2 An intensification of personal relationships, closer relationships with people who have proven to be “true friends” and a distancing from incriminating or superficial contacts. Likewise, many people report that they have developed greater compassion for other people.

- 3 Becoming aware of one's own strength: Coping with the trauma conveys an awareness of one's strength, but also vulnerability is increased. Evidently, the two are closely related. The knowledge of constant vulnerability represents an acknowledgement of reality, which is experienced as an inner preparation for further blows of fate. The fact that a terrible event has already been overcome once strengthens confidence in the ability to cope with hardships in the future.
- 4 Discovering new possibilities: Priorities change, and the interruption from the outside allows those affected to escape from structures that previously seemed unalterable. A frequent consequence is that people turn away from professional lives that took up (too much) time and energy and turn towards occupations that seem more meaningful to them.
- 5 An intensified spiritual awareness: Last but not least, many affected people find a new and deeper access to spirituality or religiosity.

As might be expected, posttraumatic growth is associated with meaning in life (Cann, Calhoun, Tedeschi, & Solomon, 2010; Paterno, 2012; Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2012). People who say their life has changed for the positive after a trauma report more meaningfulness than people without posttraumatic growth. Tedeschi and Calhoun have recently taken this into account by adding existential change to the fifth domain of posttraumatic growth, which is now termed "spiritual-existential change" (Tedeschi et al., 2017). It covers a greater clarity about life's meaning; better ability to face questions about life and death; more connectedness with existence and a greater sense of harmony with the world (Tedeschi et al., 2017). In one of our studies, people who reported posttraumatic growth attached particular importance to communion, attentiveness, social commitment and health as sources of meaning (Paterno, 2012).

It is not yet fully understood why posttraumatic growth occurs in some people and not in others. The results are contradictory in terms of age, gender and severity of trauma. However, there is consensus in the literature that fundamental assumptions must have been shaken for posttraumatic growth to ensue. The typical consequence of such a shock is intrusive rumination, a severe form of brooding that can hardly be controlled deliberately. If this rumination leads to a conscious, active confrontation with the trauma, then it is another condition for posttraumatic growth. What is necessary for this is the willingness to allow the suffering, to accept it – and thus to finally release it (cf. Schnell, 2018).

It is also helpful if other people treat with compassion those who were affected, stand by them and are prepared to react empathically to revelations of traumatic experiences, which are often difficult to bear even for those who are close (Cann et al., 2010; Calhoun & Tedeschi, 2014).

11.5 Know thyself!

ESSENTIAL QUESTIONS: DEATH AND DYING

- How often do you think of your own death and of your dying?
- Do you find dying frightening
- Are you afraid of death?
- Do you think that seriously ill people should be confronted with their death and dying by medical, therapeutic and/or nursing staff
- Can *you* talk to seriously ill people about death and dying?
- Talk to someone about your attitude towards death and dying!

FOR CONTEMPLATION

For traumatised people, the hint of the possibility of posttraumatic growth is often of little help; it might even be experienced as a slap in the face. Dealing with the findings on posttraumatic growth requires great caution. The experiences of American journalist Barbara Ehrenreich, who was diagnosed with breast cancer, are revealing:

The cheerfulness of breast cancer culture goes beyond mere absence of anger to what looks, all too often, like a positive embrace of the disease. . . . Writing in 2007, *New York Times* health columnist Jane Brody faithfully reflected the near universal bright-siding of the disease. She gave a nod to the downside of breast cancer and cancer generally: “It can cause considerable physical and emotional pain and lasting disfigurement. It may even end in death.” But for the most part her column was a veritable ode to the uplifting effects of cancer, and especially breast cancer. . . . In the most extreme characterization, breast cancer is not a problem at all, not even an annoyance – it is a “gift,” deserving of the most heartfelt gratitude. (Ehrenreich, 2010, p. 27ff)

And in our implacably optimistic breast cancer culture, the disease offers more than the intangible benefits of spiritual upward mobility.

You can defy the inevitable disfigurements and come out, on the survivor side, actually prettier, sexier, more femme.

(Ehrenreich, 2010, p. 30)

Clearly, the failure to think positively can weigh on a cancer patient like a second disease. . . . Breast cancer, I can now report, did not make me prettier or stronger, more feminine or spiritual. What it gave me, if you want to call this a “gift,” was a very personal, agonizing encounter with an ideological force in American culture that I had not been aware of before – one that encourages us to deny reality, submit cheerfully to misfortune, and blame only ourselves for our fate.

(Ehrenreich, 2010, p. 43 f.)

11.6 Literature

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