

HEALTH AND STRESS

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SURVIVING STRESS: WHY ARE SOME PEOPLE SO SUPERIOR?

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Stress is an inescapable consequence of life and comes in all sorts of shapes and sizes. Stress can stem from sources such as germs and pollution that cause diseases, natural disasters, accidents, wars and terrorist activities that threaten lives, major life change events like the loss of a spouse or a host of irritating hassles that challenge you several times a day. Over the past half-century, scientists have steadily confirmed the diverse and deleterious consequences that stress can have on health. They have also increasingly uncovered the diverse mechanisms of action that may mediate this damage.

These effects of stress range from direct endocrine, immune and nervous system disruption to indirect influences on behavior that affect eating, drinking, smoking and sleeping habits. While everyone

is subjected to stress our responses can be quite different depending on how we perceive or interpret the situation. **Some people seem to be able to cope with certain types of stress much better than others. Why?**

Are some individuals more resistant or susceptible to stress because of genetic factors or do environmental influences play a greater role in shaping how we sense and react to stressful stimuli? As noted in a previous Newsletter, researchers recently identified what has been referred to as an "anxiety gene". It acts by influencing the transport of serotonin, a neurotransmitter that affects emotions and mood. People with a shortened version of this gene showed significantly greater physiologic responses to frightening stimuli. Sophisticated imaging studies confirm increased activity in the amygdala, a portion of the brain associated with palpitations, rapid breathing, sweaty palms and other "fight or flight" responses.

However, the amygdala is also influenced by early environmental exposure to stressful situations and activity is heightened in abused children regardless of their genes. Conversely, the more a mother rat licks and grooms her offspring, the less fearful they will be when confronted with challenges later in life compared to controls

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with less attentive mothers. Although how we respond to stress can depend upon both inherited and environmental factors, nurture appears to be more important than nature. In addition, **while we can't control our genes or avoid stress, we can learn how to change the way we perceive and respond to threats to minimize their harmful effects.** This is where the future of stress research lies.

Mind/Body Relationships And Health

Most of us think of health as essentially being the absence of illness. Indeed, we are apt not to think about health at all until we become ill. Dictionaries usually define health as "soundness of body", in which all the normal physical functions of the organism are retained. Health is derived from an Anglo Saxon word best translated as "whole" or "hale" that is also restricted to the well being of the body. Mental health was rarely referred to until 90 years ago because of the profound influence of the 17th century French philosopher, René Descartes.

Descartes viewed the body as an intricate machine, similar in nature to the multifunctional and complicated clocks that were popular at the time. Disease was due to a malfunction of the mechanical parts of this body/machine. Therefore, finding and fixing the problem could best be accomplished by a greater knowledge of the smaller working components of this complex contrivance. This was the function of the physician. Disorders of the mind were beyond man's ability to comprehend, much less correct. Most people believed that emotional disturbances and mental illnesses were due to demonic possession or a punishment from God and were therefore under the jurisdiction of the Church and should be treated by priests.

In contrast, mind and body were considered to be inextricably intertwined in ancient civilizations. The Chinese taught that everything in the universe was pervaded by a mysterious force called *Qi* (*Chi*), with its complementary *yin* and *yang* components. *Yin* was feminine, mysterious, dark and negative, while *yang* was masculine, sunny, warm and positive. Good physical and emotional health depended on the orderly

flow of *Qi* through prescribed pathways (meridians) in the body and a proper balance between *yin* and *yang*. Disease resulted when this flow was blocked but could be cured by acupuncture, moxibustion or the application of lodestones at sites where meridians contacted the skin.

The Greeks believed that good mental as well as physical health depended on the proper amounts and balance of four cardinal body elements or "humours": blood, phlegm, yellow bile, and black bile. Melancholy comes from *mélas* and *chole*, the Greek words for black bile. An excess of black bile was thought to cause depression in females and to also make them more prone to malignancy of the breast and uterus. **Recent research has confirmed a link between depression and these cancers.**

Other terms we still use to refer to emotional disturbances have roots that also go back to antiquity. Over two thousand years ago, Hippocrates defined hysteria as abnormal behavior, headache and vague abdominal complaints that tended to occur primarily in unmarried Greek women. It is derived from *hysterikos*, the Greek word for uterus. Hippocrates believed that such problems were caused by an unnatural state of sexual abstinence, which caused the womb to "wander" throughout the body in search of satisfaction.

The cure was to get the uterus to stop its roaming and return to its proper position and alignment in the pelvis by placing sweet smelling balms and herbs at the vagina and noxious disagreeable potions at the nostrils. This attempt to coax the womb back to where it belonged may be how aromatherapy began. The monthly menstrual or lunar cycle was subsequently believed to be responsible for other emotional and mental changes in women, giving rise to terms like lunacy and lunatic.

What Does "Good Health" Really Mean?

The Roman poet, Juvenal, defined being healthy as having "*A sound mind in a sound body*". However, we seem to have neglected or forgotten the first part. Doctors are devoted to the diagnosis and treatment of diseases. Researchers tend to be interested in what kind of diseases we are likely to develop based on inherited and/or

environmental "risk factors". Those who study stress are similarly preoccupied with how it contributes to various disorders because of Hans Selye's seminal studies showing that various stressors could produce pathologic changes in experimental animals similar to those seen in patients with ulcers, arthritis, hypertension, heart attacks, strokes and other "Diseases of Adaptation".

In all of these instances the emphasis has been on pathogenesis, the process by which disease occurs. There have been relatively few studies devoted to investigating why some people remain healthy despite being exposed to the vicissitudes of life that devastate so many others. Physicians generally receive scant education in preventing mental or physical illness other than learning the rudiments of sanitary practices, the benefits of various vaccinations and vitamins, the importance of proper nutrition or the need to avoid smoking and other injurious lifestyle habits. The focus has been on finding better methods to diagnose and treat disease rather than prophylaxis.

As a result, our "health care" system is essentially a "sickness cure" system. What we call "health insurance" is really "sickness insurance". We only visit doctors when we are sick while Chinese physicians were often paid to keep their patients well. This makes more sense since it is much more effective to prevent illnesses, especially those that may be stress-related. Traditional stress reduction strategies such as meditation, muscular relaxation, yoga and jogging are primarily designed to reduce the annoying symptoms of stress after they have occurred. In recent years, there has been much greater emphasis on teaching individuals either how to avoid stress or ways to prevent and reduce its damaging emotional and physical effects.

This is best accomplished by cognitive strategies such as behavioral modification, time management or assertiveness training depending on the individual. Unfortunately, few physicians have the time or training to serve as effective resources in these or other preventive measures, nor are such services reimbursable by fiscal intermediaries. **Doctors do not get paid for thinking or**

caring or the amount of time they spend to help patients identify the source of symptoms that may have no organic basis. Nevertheless, there is a growing interest not only in preventing disease but also in what might be termed health enhancement.

This dual nature of medicine is exemplified in Greek mythology by Hygeia, the Goddess of Health, and Asclepius, the God of Medicine. Those who worshipped Hygeia believed that health was the natural order of things, a positive attribute to which we are entitled if we learn to govern our lives wisely. The most important function of medicine was to discover and teach those natural laws that promote a healthy mind in a healthy body. Those who adhered to Asclepius viewed the role of the physician as treating disease or restoring health by correcting damage due to birth injuries or subsequent accidents and trauma. This latter approach has prevailed because of the advent of antibiotics, radiology, biochemical analyses and other stunning advances in medicine as well as surgery during the last century.

Good health is not the mere absence of disease but rather a robust state of both physical and emotional well being that promotes optimal functioning. For a few, it is a feeling of extraordinary vigor, joy and creativity that has been referred to as euexia. Studies that have focused on those attributes and characteristics that promote optimal health have come to surprisingly similar conclusions and an increased appreciation of how health, longevity and performance can be profoundly influenced by attitudes and lifestyles.

One of the most important ingredients is how we perceive and respond to stress but this requires considerable effort to change. As René Dubos noted, *"Men, as a rule find it easier to depend on healers than to attempt the more difficult task of learning to live wisely."*

Aaron Antonovsky And Salutogenesis

Aaron was born in 1923, served in the army in World War II and subsequently studied at Yale, where he obtained his Ph.D. in sociology. He emigrated to Israel in 1960 to work at the Department of Social

Medicine of the Hebrew University of Jerusalem and over the next ten years published a series of groundbreaking papers on the startling effects that one's social class could have on health and longevity. He later helped develop the Ben-Gurion University Medical School where he established and Chaired the Sociology of Health Department. He was responsible for shaping the medical school's biopsychosocial and community orientation as well as its standards for admission. Both have become much copied models.

During the next two decades, he taught countless students and physicians how to look at health, disease and society as a whole that gave them new insights on how to practice their profession. Antonovsky was fascinated by individuals who not only seemed to survive the horrors of the Holocaust unscathed but also became stronger human beings. He was a great admirer of Selye; we corresponded regularly and our paths occasionally crossed. He became ill during a conference in Lisbon in 1994 and his untimely death a few months later prevented him from being the recipient of the Hans Selye Award at our International Congress on Stress the following year.

As he once explained to me, the questions scientists pose are often more important than any answers. The question Aaron chose to ask was **"What is it that lets a few people survive and even remain unexpectedly healthy despite suffering severely from fear, threats, starvation, and torture?"** In trying to answer this question of why people stay healthy instead of why they get sick, he developed his concepts of "salutogenesis" (the origin of health) and "sense of coherence". The stronger one's sense of coherence the greater the ability to cope with stress, avoid threats and turn inescapable problems into challenges that could be conquered. This held true not only for Holocaust survivors but also other individuals he studied who had remained healthy despite being subjected to severe stresses.

The core of these salutogenic and coherence concepts consists of three components:

1. **Comprehensibility** - The extent to which a person finds or can learn to structure their world so that it becomes understandable, meaningful, orderly and consistent, instead of chaotic, random and unpredictable.
2. **Manageability** - A person's sense of being able to cope by relying on his or her own resources or getting help from others rather than constantly complaining or grieving.
3. **Meaningfulness** - The deep feeling that life makes sense emotionally and that life's demands are worthy of commitment, particularly if "disastrous experiences are willingly accepted as challenges to search for sense and to overcome with dignity".

Space limitations preclude going into each of these in greater detail to explain how Antonovsky believes these attitudes can be developed. Further information can be obtained in his books, *Health Stress and Coping*, (1979) and *Unraveling The Mystery of Health: How People Manage Stress and Stay Well* (1987). These contain questionnaires that allow you to appraise your status with respect to each of the components that comprise salutogenesis. **The key to all of this is the conviction that we have the ability to control and thus create our destinies.** Individuals who do not believe they have this capability are unable to develop the sense of coherence required to cope with stress successfully or triumph over tribulations.

Others have shown the crucial role of a strong sense of control in resisting stress but Aaron's emphasis on the importance of meaningfulness added an important and neglected dimension. In his books and over 100 papers he combined creative conceptual theories with sophisticated quantitative methodologies and was able to present all this in an informal and crystal clear fashion. His salutogenic approach has since been utilized for applications ranging from predicting PTSD, burnout, disease outcomes, and immune system depression to selecting superior managers and developing parenting skills. It has also stimulated new concepts such as Strümpfer's *fortigenesis*, which adds the dimension of different "strengths" to salutogenic health.

The "Hardiness" Personality

Hardiness is defined as "boldness, audacity or being hard" but these are not the qualities of a hardiness personality. Hard originates from *krátus*, a prehistoric Indo-European word meaning power that was subsequently carried over into Greek as *krâtos* (strength, power, authority). It is the source of the ending "cracy" in words like democracy and aristocracy. However, its early Germanic form, *kharthuz* (that later became *hart*) meant being "resistant to pressure" and this is a more accurate description of the hardiness personality.

The term originated with Susan Kobasa and coworkers who were also curious about why certain workers seemed to be resistant to occupational pressures that overwhelmed others. They decided to study male middle managers and executives at Illinois Bell in 1975, when the company was just starting to break up. These individuals had previously enjoyed safe and secure positions as employees of a federally regulated monopoly free from competition. Many had strong roots in their communities and had prominent positions as respected leaders in civic, educational, cultural or church activities. However, all this changed abruptly following the 1974 Justice Department antitrust suit against AT&T charging monopolization of the telecommunications industry and anti-competitive behavior. This led to MCI and other competition and the breakup of the 80 year-old Bell cartel.

Illinois Bell employees were severely stressed because they were either losing their jobs or being reassigned to locations that meant leaving friends and family and required other major lifestyle changes. Over the next eight years, it appeared that these executives tended to respond to such stresses in two very different ways. Those in the first group had increasingly more psychological problems, medical symptoms and physician visits. **In sharp contrast, the second group not only failed to show any increase in complaints but actually appeared healthier and more robust throughout this stressful period.** These differences were not related to either job loss or having to move from their homes or communities.

Kobasa referred to this second group as having a "hardiness" personality because of three interrelated characteristics or attributes:

1. **Commitment** - having a sense of purpose and meaning for why you are doing something and being actively involved in all aspects of your personal life.
2. **Control** - believing and acting as if you can influence the events that shape your life by focusing your energy on events over which you may have some control and not wasting your time, talent and energy on situations you can't escape or influence.
3. **Challenge** - stressful changes are unavoidable but viewing them as challenges to conquer can provide an opportunity for growth and development.

This is explained in *The Hardy Executive: Health Under Stress* (1984) and is similar to Antonovsky's concept of meaningfulness. These concepts were recognized ages ago. **The closest word the Chinese have for stress would be translated as "crisis"** and consists of the two characters noted below. The top character denotes **danger**. The one below signifies **opportunity**.

DANGER	
CRISIS	
OPPORTUNITY	

Thomas Edison is a good example of hardiness or an optimist who viewed difficulties as providing opportunities. In his early attempts to create artificial light, the bulb lit but the filament quickly burned out. He and his staff tested some 6000 products from all over the world for two years before finding one that was satisfactory. A visitor to

his Menlo Park laboratory who had witnessed failure after failure during this period asked him why he didn't seem to be frustrated or depressed over this. Edison replied, "Why should I be? Now I know 4,956 things that don't work."

Can Your Attitude Affect Your Health?

Several studies have shown that individuals who score high on hardiness scales have less stress-related illnesses, lower blood pressure and lipid levels and tend to be better adjusted and happier. Whether people can be taught to develop hardiness and thus less likely to become ill remains to be proven. Martin Seligman, Professor of Psychology at the University of Pennsylvania, has been studying pessimists and optimists for three decades. He is convinced not only that optimists have healthier and happier lives but that it is possible to improve your health by achieving a more optimistic attitude.

Pessimus is Latin for worst and the word for best is *optimus*. Thus, pessimists look on the worst side whereas optimists are hopeful and believe that everything "happens for the best". Pessimists magnify the significance of negative events by either exaggerating problems or their inability to cope with them. They tend to believe that misfortunes are their fault because of lack of talent, stupidity or unattractiveness and that they will be permanent or replaced by other miseries over which they have no control. Optimists believe that good, rather than bad things will happen to them and perceive such events in their lives as controllable. When something bad occurs they view it as isolated and temporary rather than as part of a general trend or persistent pattern of life.

In *Learned Optimism*, (1998) Seligman explains how you can gain a brighter outlook on life by changing thinking habits responsible for your "explanatory style"; this refers to the way you tend to explain setbacks to yourself. You can learn where you rank on a scale ranging from profound pessimism to extreme optimism and how to improve through a series of exercises that teach you how to avoid or control unhealthy pessimistic thinking habits.

In one study, those school children scoring highest for pessimism were most

likely to suffer depression as adults. **High optimism scores were predictive of excellence in everything from sports to life-insurance sales and allegedly saved Metropolitan Life millions of dollars in personnel selection.**

Optimism also brings in votes. By analyzing campaign speeches for the prevalence of optimism, Seligman predicted the winners of the 1988 Presidential and Senate elections more accurately than veteran political forecasters. Another study followed 96 men who had their first heart attack in 1980. After eight years, 15 of the 16 who were the most pessimistic had died of a second heart attack compared to only 5 of the 16 rated as most optimistic. **Subsequent studies have confirmed that depression is a significant risk factor for coronary mortality and particularly for women who have had a heart attack.** A recent Yale report found that people aged fifty or older who were more optimistic about aging as measured by ratings obtained up to 23 years earlier lived 7.5 years longer than those with less positive perceptions. This amazing survival edge is greater than that associated with engaging in regular exercise, low body mass index, low blood pressure or cholesterol levels and not smoking. It persisted even when researchers accounted for age, sex, income, loneliness and ability to engage in household and social activities.

Another factor that is likely to be involved is cardiovascular responses to stress, which the Yale researchers had previously shown to be adversely affected when older persons are exposed to negative stereotypes of aging. The elderly may not be aware of their negative views of aging because they are internalized in childhood and unlikely to be consciously evaluated in later life. It's not always possible to gauge optimism by appearances and some people who always seem to be upbeat with a cheerful attitude may still be overly cautious because of deep seated fears. When contemplating situations they tend to catastrophize them with unpleasant "what if?" speculations. Unbridled optimism such as a "nothing bad will happen to me" attitude may be equally unwarranted and unhealthy. It is often seen in association with risk taking behaviors such as not wearing a seat belt or

engaging in dangerous recreational activities. Optimists believe we live in the best of all possible worlds and pessimists fear this is true. **Pessimists may be right in the long run, but optimists are likely to have a much more enjoyable trip.**

Rating Scales And Semantics

Salutogenesis, learned optimism and hardiness all confirm that the feeling of control is a powerful stress buffer that contributes to better health and thus longevity. These concepts are rooted in the research of Richard Lazarus and colleagues at Berkeley, who showed over 35 years ago that the ability to withstand a stressful situation depended upon how the individual perceived it. The problem is that all of the above traits are difficult to define much less measure accurately and they often blend into one another. **Certain words used to describe personality and behavioral features and qualities like hopeful, resilient, adaptable, confident and self-assured may have similar meanings but could have very different connotations for different individuals.**

Just because a questionnaire is titled "Optimism" or "Hardiness" does not guarantee that this is what you are actually measuring. In many instances, such as scales for optimism and hardiness, ratings are based not on the presence of these qualities but the relative absence of characteristics like pessimism. Optimism can be assessed with other instruments such as the Optimism-Pessimism scale using scores obtained from the MMPI (Minnesota Multiphasic Personality Inventory). While this also shows that optimists have healthier lives, ratings from different self-report questionnaires for the same trait are often far from congruent, so which is the most accurate?

Many traits and behaviors are best evaluated by observing the individual rather than relying on self-report. Questionnaires that have been designed to measure Type A behavior such as the Bortner, Framingham and Vicker Scales really reflect attitudes rather than behaviors. The only Type A questionnaire that has demonstrated statistical significance for predicting coronary mortality is the Jenkins Activity Survey. It

assesses three main components: hard-driving temperament, job involvement, and speed and impatience. Although each of these subscale scores tends to correlate with the total evaluation, they are not necessarily related to each other and there may be little internal concordance.

Type A behavior is best measured by a structured personal interview in a setting designed to elicit characteristic traits and activities conducted by a trained observer. Although the Jenkins Activity Survey is the best self-report instrument for measuring Type A, it only jibes with personal interview ratings 70 percent of the time. In assessing any personality characteristic it is also important to distinguish between traits, which tend to persist over time, in contrast to states that can fluctuate depending on the situation at that particular moment. Typical Type A behavior is apt to be muted in a patient in the hospital who is recovering from a severe heart attack.

Some feel that hardiness and Type A should not be considered as unitary concepts and that their components should be evaluated separately since some are much more important than others. Several years ago it was proposed that hostility was the toxic component of Type A. Ratings were based on a hostility "Ho" scale developed 60 years ago to identify teachers who had either good or bad rapport with students. It was subsequently reported that teachers with high scores had higher coronary mortality rates. The scale was based on 50 MMPI items and researchers narrowed this down to 27 items that had even greater predictive significance and subscales to allegedly measure cynicism and paranoia.

None of the above measures anger, irritability or aggression, which are the hallmarks of overt hostility. In the NHLBI Twin Study, the (Ho) scale correlated positively with anxiety, neuroticism and a tendency to "fake good", none of which are associated with increased coronary mortality. Like Type A, hostility is best assessed by observing behaviors. High ratings with this approach correlate with measures of dominance and self-confidence but show little concordance with "Ho" scores, which seem to reflect neuroticism and psychopathology rather than hostility.

Traits and personalities are usually a potpourri of characteristics and attitudes that can be difficult to dissect or define. As Maeterlinck wrote, **"How strangely we diminish a thing as soon as we try to express it in words."**

Hopkins Physicians, Nuns, Harvard Students And The Art Of Aging Well

As an old saying goes, **"Everyone wants to live long but nobody wants to grow old."** While genes may have a lot to do with achieving this goal it seems clear from the studies cited that attitude and personality can significantly affect physical and mental health as well as longevity. Additional support comes from other large and long-term prospective studies. The Precursors Study has been following 1,337 Johns Hopkins physicians from the classes of 1948-1964 with annual detailed questionnaires designed to determine health status as well as a number of psychological variables. It was initiated by Caroline Thomas to identify risk factors for cardiovascular disease and participants had thorough physical examinations, laboratory studies and filled out 11 pages of questions about their parents and siblings, their childhood, social relationships, work, play and eating habits. Caroline was intrigued with the impact personality and mental state might have on the development of diseases. In addition to standard psychological questionnaires, she administered Rorschach inkblot and figure drawing tests to search for characteristics of aggression, passivity, or anxiety and also had students interviewed by a psychiatrist. Over the years, high cholesterol→heart disease and obesity→diabetes links emerged and it was also possible to identify those who would be more likely to later have emotional disturbances, commit suicide, develop cancer or remain surprisingly healthy based on attitudes and personalities.

David Snowdon began his ongoing "Nun Study" in 1986 in an effort to find out why nuns tended to live long and healthy lives and to identify factors that might influence the development of Alzheimer's disease. The 678 participants (aged 74 to 106) agreed to provide access to their medical and personal histories and to donate their brain tissue to the project after death. As confirmed in *Aging with Grace* (2001), **successful aging was associated with an optimistic attitude** as well as exercise and nutritional habits. Good linguistic abilities helped to prevent Alzheimer's and **fewer and fewer positive emotions were expressed as mental function declined**.

George Vaillant, Professor of Psychiatry at Harvard Medical School also believes that a positive attitude is more important to successful aging than genetics, wealth or physical health. In *Aging Well* (2002), he reports on 824 individuals followed for over 50 years. The three study groups (male Harvard graduates, inner-city, disadvantaged males and intellectually gifted women) showed surprisingly similar conclusions. **Humor, altruism and creativity are important attributes that improve our ability to resist the inevitable stresses of old age**. Creativity makes us more emotionally resilient, enriches relationships and improves immune system function. People who became or remained creative in their eighties and nineties were cited, like Monet and Stokowski. George Bums was 100 and there are numerous others. George Bernard Shaw died at age 94 while working on a new comedy. As he wrote in *Back to Methuselah*, **"You see things and say 'Why?' But I dream things that never were and say 'Why not?'"**. Stay tuned for more on this!

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