

Disclosure and autonomic autopoiesis: A research and treatment model for twenty-first century cancer survivorship

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Introduction and background

A unique collaborative effort among disclosure researchers formed the feature in the Summer 1999 issue of *Advances*. An interview with James Pennebaker, the “inventor” of disclosure research, was followed by comments from prominent researchers in this area, all in an effort to shed more light on the relationship between disclosure and health, and to map out future directions in this field of study. “Disclosure,” wrote the editor of *Advances*, “is clearly a work in progress. How important it may be, both as a clue to the mind’s abilities to affect the health of the body and as a possible tool in maintaining and even restoring health, is the layered question at which the disclosure research of the next several years hopes to chip away.”

How are mind-mediated events translated into molecular biology? What variables determine the end result – the maintenance of chronic illness, say, or the restoration of health? These are questions that I began to ponder seriously in 1978, when I developed severe essential hypertension. I was a recently appointed associate professor of pharmacology at Wayne State University School of Medicine in Detroit, with training in psychosomatic medicine (New York University Medical Center and Bellevue Hospital Center) and three years of research training at the National Institutes of Mental Health (in the laboratories of Irwin Kopin and Julius Axelrod, dissecting the functional characteristics of the enzyme, dopamine beta hydroxylase). At Wayne State, my assigned

teaching and research responsibilities revolved around the pharmacology of cardiovascular drugs and the autonomic nervous system.

In addition, as an Ohio State University medical student, I had spent the summer between my second and third years in the laboratory of Professor Ulf von Euler in Stockholm where, as a visiting research scientist, I was exposed to von Euler’s work on catecholamines, the neurohumoral transmitters that are central to the function of the autonomic nervous system. (Von Euler shared the Nobel Prize for medicine with Julius Axelrod and Sir Bernard Knox in 1970, for “their discoveries concerning the humoral transmitters in the nerve terminals and the mechanism for their storage, release, and inactivation.”) It was on my return that I decided to pursue a degree in pharmacology along with my medical degree, and I took as my research problem the relationship to schizophrenia of the catecholamine, dopamine. At graduation, I received the Borden Undergraduate Research Award, given each year to the medical student with the most meritorious research.

As a young medical graduate thirty years ago, it was clear to me that the autonomic nervous system and its various neurotransmitters were integrally involved in our minute-to-minute and day-to-day survival. This neuronal system, also known as the visceral, vegetative, or involuntary nervous system, sends chemical signals into the nucleus of any cell that is innervated by autonomic nerves. The hypothalamus is the principal locus of integration of the entire autonomic nervous system and is involved in the regulation of body temperature,

water balance, carbohydrate and fat metabolism, blood pressure, emotions, sleep, and sexual reflexes. Its representation in the periphery consists of nerves, ganglia, and plexuses that provide the innervation to the heart, blood vessels, glands, and other visceral organs and smooth muscles.

In a sense, my medical résumé reflected my inner life. The death of my father from hypertension at the age of 52 when I was a small child contributed to years of subconscious fear about my own chances of an early death from hypertension. My pursuit of psychiatry, internal medicine, and an academic career in autonomic pharmacology can be seen as my attempt to survive by becoming intimate with my subject matter. How fortuitous that I would choose the autonomic nervous system.

When I received the diagnosis of essential hypertension, and was prescribed diuretics and beta-blockers, I began a systematic psychoanalytic study of the "translation rules" between mind and body. Over an 8- to 9-month period, my blood pressure was brought under control nonpharmacologically, and a method that I would later call "autonomic re-education" began to permeate my consciousness. I became a meditator and practiced breath control and yoga, I became macrobiotic and a long-distance runner, and I learned more about myself in a long-term therapeutic relationship with a psychoanalyst.

As a newly cured black hypertensive, I decided to become a specialist in its nonpharmacological treatment. I coauthored a paper in the *American Journal of Cardiology* entitled "Plasma Norepinephrine in Congestive Heart Failure" (Thomas & Marks 1978), where I outlined the relationships between autonomic hyperfunction and cardiovascular dysfunction. I opened a clinic named "The Holistic Hypertension Treatment Center," and in a formal announcement I presented to my colleagues at the hospital where I practiced my understanding of what seemed to me to be a new phenomenon of autonomic re-education – that autonomic re-education could serve as a treatment for severe hypertension in blacks. This was met with polite skepticism, some hostility, and some indifference.

In 1980 I presented a paper in Bergen, Norway, entitled "Hypertension in Blacks," and someone in the audience noted that in America there were black people who were his color (white) and my color (black). "How," he asked me, "do you know in America who is black?" To be honest, before that Norwegian colleague posed his question, it had never occurred to me to challenge the notion of race based on skin color. Skin color, I understood in that instant, was symbolic, and did not translate into a packet of genes that made up a black person or packet of genes that made up a white person. It became clear to me that race based on skin color as we use it has no biological basis. Rather, the specific attributes with which the symbol was imbued have profound influences on the person who adheres to the symbolic label.

Among my American colleagues, I promoted the controversial thesis that, given the available evidence, the academic community must conclude that there is no biological basis for the notion of race as we use it. I maintained that biology should no longer be held hostage by the "color line."

I found little interest in the pharmacology department for the clinical study of the biochemistry of emotions in persons labelled "black." I lectured widely on the topic of hypertension and gave workshops. Few people were interested.

This was 1980; I applied for grant money, and none was available. I organized an international symposium on race, color, and hypertension that I could not get funded, so I organized a national symposium instead. In the same year, unknown to me, research by Nozdrachev (1980) demonstrated that the autonomic nervous system was subdivided into the sympathetic, parasympathetic, and metasympathetic parts. Of particular importance to my future thinking was the last component, the metasympathetic system, which includes the complex of microganglia situated in the walls of visceral organs with marked motility activity (the heart, ureters, intestine, stomach).

Most notable about the metasympathetic system is that it attains the features of true autonomy. Its cells have no direct connection with the higher centers: this connection is established

through mono- and polysynaptic sensory and afferent units of sympathetic and parasympathetic activity. The system has a definite set of functional elements. Neurons of the metasympathetic system are incorporated through interganglionic connections into the common functional network of an organ such as the intestines. A typical excitatory pattern suggests the presence of a temporary connection in the work of at least two neurons, in a “driver–follower” relationship. In addition to excitatory patterns, there are also patterns showing inhibitory interactions.

The autonomic nervous system, through its ability to influence the expression of genes, behaviors, and physiological and cognitive functions, is involved in contributing to and/or ameliorating disease processes (Dimberg 1987; Schwartz et al. 1998; Coangelo et al. 1998). The demonstration by Nozdrachev of excitatory as well as inhibitory autonomic regulatory expression and his demonstration of the autonomous nature and capability of the metasympathetic system, coupled to the research cited above, would later lead me to infer a putative normative inhibition mechanism that must be operative in maintaining homeostasis. While I did not know this in 1980, I did know that “autonomic re-education” would cure severe essential hypertension.

I was fortunate during the early 1980s, however, to be drawn to several key papers that gyroscopically kept me headed toward this present moment. A paper by Gary Schwartz, “Testing the Biopsychosocial Model: The Ultimate Challenge Facing Behavioral Medicine” (Schwartz 1982) and George Engel’s “The Biopsychosocial Model and Medical Education” (1980) were pivotal works in keeping me on track. I renamed my clinic the Center for Contemporary Medicine, but despite all my efforts, the venture failed to be financially viable.

Fortuitously, I rented office space to a psychologist, Sara Schreiber, who assisted women who had terminal breast cancer. The collaborative partnership that followed over the next seven years, from 1983 to 1990, marked a turning point in my view of disclosure and health.

I worked with Dr Schreiber as a cotherapist in a psychotherapy support group for women who

were then considered terminal breast cancer victims. We used psychodrama techniques based on the work of Jacob Moreno (1947), and in this setting, women had the opportunity to reenact their early life histories. They then received group support in changing their present interpersonal behaviors. In this setting, the psychodrama acted as the vehicle for disclosure, and what was disclosed became the vehicle for transformative change.

There was one ground rule of the group. In telling and enacting their life stories, the women were encouraged to relate the enactment of the story to their will to live and to their concept of hope. In the group enrollment interview with each participant, we had made clear that the focus of the group was on wellness and not sickness, and that sickness care issues would be addressed only in private sessions.

As the early group work progressed into the mid-1980s, certain themes emerged in the psychodramas: (1) as young girls, the women learned to mold and shape themselves and their behaviors to meet the needs and wishes of significant others; (2) they learned that safety was in being a “good girl” and in doing the “right thing”; and (3) they learned to direct any aggression that they consciously experienced inward onto themselves rather than outwardly onto significant others.

The emergence of these themes led us to construct a number of assessment tools to evaluate the presence or absence of the themes in women newly diagnosed with breast cancer. Our first tool was the “Self-Directed Aggression Questionnaire.” This questionnaire allowed the patient to disclose deeply held emotional trauma – both those that are hidden beneath layers of psychological defenses and those that are consciously present.

Some of the women with a terminal diagnosis of breast cancer lived and thrived far beyond our clinical expectations. Some were ready to die, and did; some died peacefully, while others died without resolving old hurts and wounds, unwilling to forgive themselves and others, and unable to release pent-up emotions. As we worked, we gradually attracted women who were

not terminal, who were undergoing conventional treatment, and who wanted new methods of participating in their own healing.

As the chief architect of the Self-Directed Aggression Questionnaire, my focus was on the relationship between internally directed aggression and a women's autonomic nervous system dysfunction. Schreiber, the psychodramatist, was most skillful in framing and elucidating the deeper, unorganized emotional structure disparately stored in the body. With her assistance, women were guided to assimilate both their emotional experiences and the events that may have provoked the emotions into an expressive psychodrama. Together, our work was guided by the notion of a disparately stored emotional structure within the body, a structure that is reflected in the dysfunction of vital bodily systems – the autonomic nervous system, the neuroendocrine system, and the immune surveillance system. We sought to evaluate this emotional structure through the construction of our various questionnaires and assessment protocols, and we sought to treat it using Moreno's psychodrama methodology.

By 1987, it was clear to us that breast cancer could be ameliorated and, in some cases, a patient could be put into remission by a combination of conventional treatment, autonomic re-education, and psychodrama. Still, when two of our patients were interviewed on local television in the mid-1980s, the response from the local medical community was tepid. (I am happy to note that these women continue to visit us and are cancer free.)

Early in 1987, Schreiber and I began to discuss how to share our clinical findings and our notion of a disparately stored emotional structure. As my previous remarks probably suggested, the decade had been littered with academic rejection of my study of race from a non-biological perspective. The rejection took various forms. In 1986 to 1988, I wrote two National Institutes of Health grant proposals seeking funding to allow me to pursue my two research interests – race and cancer. Both grants were viewed as too complex, although a grant on augmenting the efficacy of mammography was approved but not funded.

Like many successful black professionals in the 1980s, I found race a pervasive irritant, much like a mosquito, buzzing in unexpectedly to land a sharp sting, receding as quickly as it appeared only to reappear when least expected. A presentation of my ideas on racial labelling given at a conference in Atlanta led to my being featured in a *Wall Street Journal* article on hypertension and race (1986), and I published journal articles on race, color, culture, and hypertension (Thomas 1984, 1986). I was, in effect, calling for a revolution, asking white America to abandon the notion of race and asking my professional colleagues to sanction this revolution.

It was with this background of a controversial thesis on abandoning the racial labelling system that we use in America that Schreiber and I agonized over how to disclose our work on breast cancer. Would the controversial nature of our thesis "color" the reception of the thesis that defined our breast cancer research? I concluded then (as I do now) that it would not have served either of the two fledgling bodies of work to further set them out in the United States of 1987. Rather, I believed that premature disclosure here would have doomed the acceptance of both research interests.

Instead, I decided to take a sabbatical from my medical practice and returned to Sweden, ultimately for six months. During this time, I arranged a lecture series to present our breast cancer work and to have it critiqued at hospitals in Stockholm and Malmo. I reasoned that the setting would provide me with a forum to discuss our findings and treatment approach without the issue of race being superimposed. Put baldly, I chose to go to Sweden to have a color-line neutral venue for presentation of the two controversial lines of research in which I was engaged. I spoke formally about our breast cancer work and informally about the issues of skin color, race, race labelling, and race-based politics.

As I had expected, issues of race were not superimposed on the responses to my presentations. The disparaging racial stereotypes, prejudices, and biases that operate daily for us in America in our color-based culture, and which had been my operative experience during the early

1980s, did not present themselves while on my sabbatical.

Retrospectively, it is clear to me that my experience – my experiment – was invaluable to me. I was encouraged by the reception to the ideas and methods I presented, and I came home more confident about the viability and value of the work, both its principles and its practice.

Practice and principles

In 1990, the Center relocated from Detroit to Ann Arbor, Michigan. I continued to conduct support groups for women with breast cancer and also for men with mixed diagnosis cancers (8 persons per group). As these groups evolved, I drew on Aaron Antonovsky’s concept of sense of coherence, the idea that a sense of coherence develops when life is meaningful, comprehensible, and manageable (Antonovsky 1979). Antonovsky maintained that coherence was health-promoting – salutogenic, as he termed it. In our group work, we defined hope as an attitude in which one has the perception and feeling that life is comprehensible, manageable, and meaningful. Hope, we concluded, is a state in which one has a sense of coherence: the stronger the sense of coherence, the greater the level of hope and the stronger the will to live.

Building on the Self-Directed Aggression Questionnaire, I developed a second assessment tool, this one eliciting an individual’s salutogenic status by allowing us to locate the individual on a continuum from pathology on one end to a state of optimal wellness on the other. With this tool we could capture data for the caregiver (we built into the assessment questions that elicited hidden emotions, overt personality traits, and psychological defenses, as well as nutritional and other lifestyle habits) while simultaneously providing the patient with a road map toward achieving meaningful, manageable, and comprehensible relationships.

Over time we developed ten interrelated assessment tools reflecting the continuum from pathology to optimal wellness, from despair to having a fighting spirit. These tools now form our “State Specific Sense of Coherence Assessment Methodology” (see Figure 1). Our approach, as it

developed, came to have the following components:

- Disclosure begins in the first visit, where a multidimensional intake assessment is obtained. In a collaborative partnership with the patient, over a 6- to 12-month period, disclosure is promoted around the personal issues identified through our assessment tools. This disclosure is accompanied by efforts to shift a person’s attitude from passive victim status to being an active agent in her own healing.
- Patients are then encouraged and assisted by me and our staff to create a treatment team for themselves, with the patient as team captain and the various caregivers as coaches. The treatment plan includes what we call level 1 interventions (focused on disease prevention and health promotion strategies) and level 2 interventions (focused on cancer treatment including chemotherapy, surgery, and irradiation), and the team includes families, children, friends, and professionals. Conjoint psychotherapy with the patient and spouse is recommended as indicated.
- Consultations with a conventional oncologist and/or radiation oncologist are obtained, and chemotherapy and radiation are generally recommended as clinically indicated – based on indices of tumor aggressiveness, size, cell type, and metastatic potential, and based on patient preference.

Any woman faced with a diagnosis of breast cancer or who is at risk for developing breast cancer must (1) improve her body’s defenses against cancer, (2) normalize the cell cycle clock in her cancerous cells, (3) promote cellular differentiation, (4) promote apoptosis or programmed cell death (that is, rid the cancer cells of their “immortality”), and (5) must impede the spread of cancer by blocking new blood vessel formation and inhibiting metastatic implant formation on the walls of endothelial cells. The implementation of these five tasks become the daily routine of our patients.

By ingesting nutrients, nutraceuticals, and pharmaceutical agents that block cancer cell

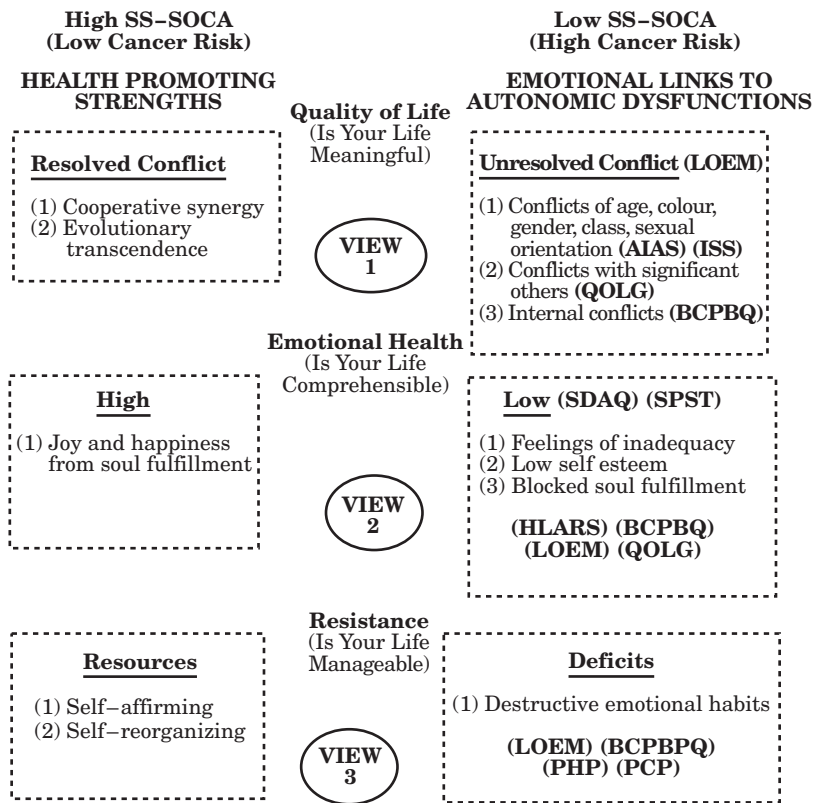


Fig. 1 State specific sense of coherence assessment tools. This diagram shows the individual focus of each of the 10 tools of the State Specific Sense of Coherence Assessment, which together are used to evaluate the extent to which patients see their lives as meaningful, comprehensible, and manageable. To the degree that they do, they represent a low risk for cancer; to the degree that they do not, they represent a high risk for cancer. The 10 tools are as follows: LOEM = Language of Emotion Questionnaire; AIAS = Attitudes in America; ISS = Invisibility Syndrome Scale; QOLG = Quality of Life Inventory; BCPBQ = Breast Cancer Prone Behavior Questionnaire; SDAQ = Self-Directed Aggression Questionnaire; SPST = Symptom Picture Screening Test; HLARS = Healthy Living Attitudes Rating Scale; PHP = Psychoemotional Characteristics Profile; PCP = Personal Characteristics Profile.

initiation, promotion, and progression, the level 1 wellness-care intervention acts as a partner to the level 2 disease-care treatment.

What might an individualized treatment plan look like? As an example, a woman diagnosed with breast cancer received a standard level 2 treatment of chemotherapy consisting of cytoxan, methotrexate, and fluorouracil. Twice a week, on the days that she was not receiving intravenous toxic chemotherapy, she received a nontoxic

biologic response modifier. This is a 1-hour infusion, administered by myself, to mobilize the woman's immune resources. During this hour, using psychoanalytically oriented psychotherapeutic tools, we probe more deeply into previously undisclosed areas.

The level 1 autonomic re-education intervention for this woman included: (1) relaxation and diaphragmatic breath work; (2) guided visualization and meditation; (3) a phyto-chemo-

therapeutic program; and (4) a guided self-change program to help integrate her inner and outer resources which served to activate her abilities to heal herself. She established and practiced her program for about six weeks following surgery, but before she was referred for chemotherapy treatment.

The basic aim of the process of autonomic re-education (or “autopoiesis”) coupled with chemotherapy is to reset, literally, the inhibition mechanism that provides regulatory controls over the expressive capacity of DNA, a control that promotes homeostasis and health by bringing about regular cell death. I call this type of inhibition “normative inhibition” – that is, the way the body should work.*

At the heart of autonomic autopoiesis is the reality of loving relationships – be it with those significant persons in the patient’s life, or with regard to cellular relationships in the diseased breast, or with the self. Loving relationships at the macroscopic level are mirrored by contact inhibition at the cellular level; and contact inhibition at the cellular level protects against metastatic disease. In loving relationships, experiences are generally viewed as being meaningful, manageable, and comprehensible; which means, as Antonovsky would say, loving relationships are salutogenic.

Antonovsky (1994), in his salutogenic model, maintains that a strong sense of coherence is determined by the extent to which a person is linked to suprasystems from which the person receives information and is capable of integrating such information and then transmitting information back to the suprasystems, which then in turn provide appropriate feedback. This general formulation can be broken down into five elements. Antonovsky sees an individual “(1) as a system linked to/isolated from suprasystems, (2) from which information/noise is received, (3) whose messages are internally integrated/undeciphered by the individual, (4) who sends information/noise to the suprasystem, (5) which

provides feedback to/ignores the message.”

Crucially for Antonovsky, “once a stable strength has come into being, the human system is capable of a reorganization of self on a higher level of complexity, more capable of pro-action.” Antonovsky is here talking about self-reorganization, or, again, autopoiesis.

To these important formulations, I would add that at the heart of self-reorganization is the autonomic nervous system, with its differentiated response to emotion either in the presence of or the failure of disclosure. Emotional disclosure, I propose, acts as an autonomic nervous system reset valve, an initiator of “autonomic autopoiesis,” restoring resilience and plasticity to the autonomic nervous system’s rate of neuronal firing and its interactions with other body systems, and awakening the individual’s transformative capacities.

I have used this adaptation of Antonovsky’s model along with our State Specific Sense of Coherence methodology in our work with women and men with breast and other cancers since 1993, as a way of promoting autonomic autopoiesis. There are three conclusions that I have drawn from the available data collected:

- selective and specific emotional disclosures in the context of a collaborative partnership have the potential to improve the patient’s sense of coherence;
- self-regulation methodology such as that used in our autonomic autopoiesis program improves the internal processing and integration of complex inputs experienced by patients with breast cancer; and
- whole-person approaches like our methodology have salutogenic properties, and may be applied with any cancer patient, or with any person who has an increased risk for developing cancer.

When I read Pennebaker’s comments about his introduction to the power of the lack of disclosure (in part through interviewing a 24-year-old patient who developed uterine cancer sometime after having been sexually molested by her stepfather beginning at the age of 14), I could recognize immediately patients of ours with related or

* To get a closer look at our e-commerce application of autonomic autopoiesis and the restoration of normative inhibition, visit our website at www.breastcancerstrategies.com

similar histories. Women in our practice commonly give histories reflecting deep hurt and/or deprivation, hidden beneath a defensive canopy. In our experience, we have found as well that the association between chronic nurturance failure and breast cancer mirrors the association between chronic sexual molestation and uterine cancer.

As in other cancers, there is, of course, a time interval of variable but considerable length (as long, possibly, as ten years) between onset of the chronic condition and the diagnosis of cancer. Pennebaker's conclusion that "behavioral inhibition was associated with a variety of physiological effects that, if maintained over time, could certainly exacerbate health problems" is supported by my years of clinical experience.

In recent years, Pennebaker reports, his understanding that the people who are able to construct a coherent story of a trauma over several days when using his writing intervention are the ones who benefit from the intervention. "Putting emotional upheavals into words and constructing stories," Pennebaker says, "is one of the secrets to the benefits of disclosure." A traumatic experience, such as that experienced by the woman who was abused by her stepfather, has the potential to completely disrupt how she connected with others. She had to conceal a significant part of herself from those most important to her, and therefore missed a sense of connectedness with others. It is this concealment and projection of a "false self" that my data and experience support as being an integral risk factor in the development of breast cancer (see Fig. 2).

People who are able to come to terms with significant events in their lives, who have the cognitive and emotional resources to be better listeners and speakers, are more connected with others. Pennebaker concludes that this social connection, together with the reductions in inhibition and greater cognitive understanding of traumas, works to improve and maintain health. "When we write about traumas and in some ways come to terms with them, we are able to free up our minds so that we can study more effectively, work without distractions, and interact with others more directly."

Why disclosure has physiological effects

Our current working model of the mechanism that explains the effects of disclosure has been constructed to gain data on cancer survivorship, and is a variant and extension of the model outlined by disclosure researchers Harald Traue and Russell Deighton in their comment on the Pennebaker interview. This model proposes that emotional stress is processed by way of an inhibition-implosion dimension modulated by dispositional factors. The model also proposes a genetically mediated innate inhibition mechanism. In the perspective of the model, a woman with breast cancer has experienced a failure of the normative genetically mediated inhibition in the context of specific dispositional factors.

I maintain that the dysregulation of the autonomic, neuroendocrine, and immune surveillance systems all contribute to this failure and that their dysregulation is supported by the dysregulation of other neurological, sociobehavioral, and cognitive pathways. I call the failed normative genetic inhibition "antagonized normative inhibition" (see Fig. 3).

I view normative inhibition – defined either by genetics or by the familial environment – as a multidomain inhibition mechanism that is central to our day-to-day experiences of life. Excessive inhibition in any domain leads to dysfunctions in and failure of the normative genetic inhibition. It is this failure, coupled with other variables, that collectively constitute carcinogenic risk factors. The mind-gene connection is built on the interactivity of this multidomain inhibition mechanism. Under severe emotional stress, excessive emotional inhibition and/or failed emotional inhibition (with emotional implosion) contribute to pathophysiology through antagonizing the normative familial/genetic inhibition mechanism.

Central to understanding this normative inhibition mechanism on a cellular level is the pioneering work of another Russian researcher, A. M. Olovnikov, and the more recent review of oncogenes and tumor suppressor genes by Klein (1987).

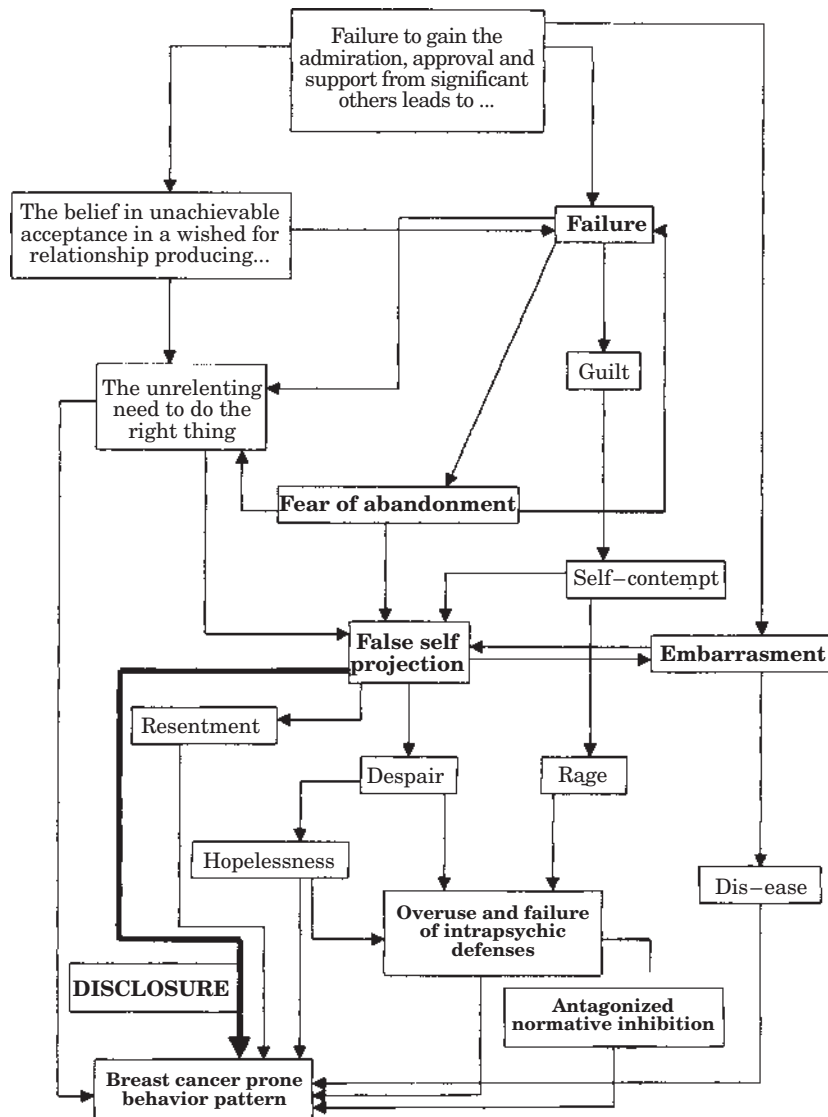


Fig. 2 Cognitive and psychosocial variables in breast cancer proneness that antagonize the multidomain normative inhibition mechanism. This figure maps the complex linkage of events by which cognitive and psychosocial factors ultimately (1) can antagonize the normative inhibition mechanism that protects the health of the body and (2) can lead to a breast cancer prone behavior pattern. Note the placement of disclosure in the lower left.

In 1971, Olovnikov proposed that telomeres, DNA sequences at the end of chromosomes that shorten in dividing normal cells, contribute to the stability of a chromosome. Subsequent data showed that the loss of the telomeric buffering capacity causes the onset of cellular senescence and the crisis of cell death. Olovnikov further

proposed that an enzyme might be activated in germ cells and in immortal cancer cells that would maintain telomere length at a constant level (1996).

Birth, differentiation, maturation, death – these are the life stages of somatic cells. The normative inhibition reflected in (1) active tumor suppressor genes and inactive oncogenes and in (2) the

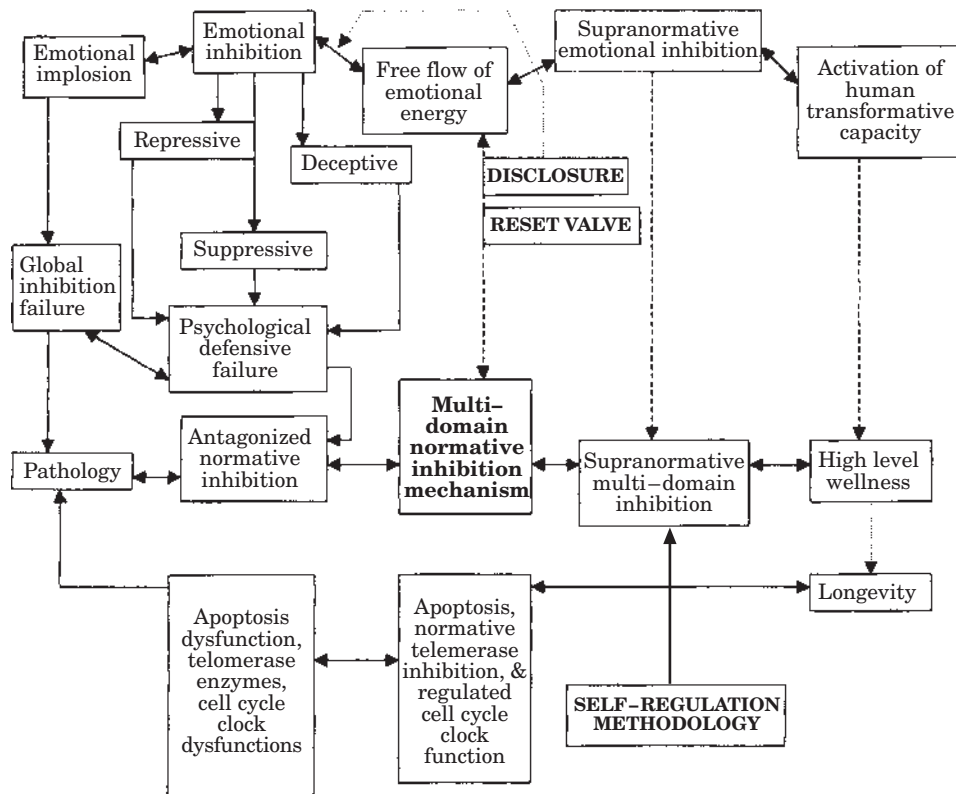


Fig. 3 The multidomain normative inhibition mechanism regulates a continuum from pathology to high level wellness. This figure outlines the process by which the multidomain normative inhibition mechanism operates on a continuum that ranges from pathology to high level wellness. It also shows where disclosure and self-regulation methodology fit in the continuum to contribute to wellness.

effective activity of modulator genes, blocks the clonal emancipation that produces tumors (Klein 1987). Tumor development may be viewed as the gradual emancipation of a clone of somatic cells from the complex controls that regulate its growth and its death.

Olovnikov's prescient proposal led to our current understanding that indeed it is telomerase that replaces tiny bits of DNA on the ends of chromosomes, allowing chromosomes in germ cells to continue to replicate. Under conditions of normative genetic inhibition, telomerase activity is inhibited in all cells except germ cells. In these cells, which have the function of reproducing the species, telomerase enzyme activity has been

emancipated. It is the emancipation of telomerase enzyme activity in normally controlled nongerm cells that appears to play an important role in immortal cancer cells.

Mehle and colleagues (1996) tested 56 renal cell cancers for telomerase activity. Forty of the analyzed tumors (71%) were positive for telomerase activity, whereas none of the 56 normal kidney samples that were examined showed telomerase activity. Likewise, Bryan and colleagues (1995) demonstrated that the presence of lengthened or stabilized telomeres is necessary for immortalization, and that lengthening and stabilizing may be achieved either by reactivation of telomerase or by a novel and as yet unidentified mechanism.

Table 1 Demand management systems that include disclosure promote normative inhibition: A new, 21st century mind/body/spirit treatment paradigm that promotes breast cancer healing. This table sets out the basic ingredients and aims of a new treatment paradigm for breast cancer that incorporates disclosure and autonomic re-education, and that works to restore the multidomain inhibition mechanism.

What is a mind/body/spirit treatment?

Mind/body/spirit treatment is a whole-person, integrative cancer treatment. The treatment reflects the 5 dimensions *or bodies* that we evaluate – spiritual (relational), mental, emotional, energetic, and cellular. The outcomes of such integrative cancer treatments are (1) to stabilize the genome, (2) re-educate the autonomic nervous system and its sister systems – the neuroendocrine and the immune surveillance systems and (3) harness the healing power of the breath to expand consciousness and awareness, thereby promoting healing within the 5 bodies.

Demand management: A 21st century oncology treatment paradigm

Demand management is a collaborative, partnership based, whole person form of cancer medicine. This partnership focuses on disclosure and freedom of flow of emotional energy. When supported by surgery, radiation, chemotherapy, nutraceutical and plant-based therapeutics, guided imagery, and guided self-change, demand management promotes health and normative inhibition.

The mechanism for healing: Restoring the multidomain inhibition mechanism

The multidomain inhibition mechanism is a multidimensional force that provides regulatory controls over the expressive capacity of DNA. Inhibition may be normative, excessive, or may fail. The two non-normative states – excessive and failed inhibition-antagonize the normative state, and collectively constitute a carcinogenic risk factor. Examples of varying degrees of interactivity between these states include the expressive capacity of DNA in benign tumor growth, malignant tumor growth, or in normal cell growth and division.

What is breast cancer healing?

Breast cancer healing, like all healing, encompasses spiritual, mental, emotional, energetic, and physical changes in the multidomain inhibition mechanism. Healing requires focused attention on (1) disclosing old wounds and hurts, thus allowing the healing light of awareness in; (2) unblocking the flow of emotional energy, allowing this flow to invigorate both the mind and the body; and (3) restoring the normative flow of the innate healing vital energy within each person.

Telomerase activity bestows upon an initiated cell the capacity to live forever. Because telomerase enzyme activity is inhibited in nongerm cells, this inhibition is an agent of certain death for old cells, assuring that senescent cells facing the death crisis will indeed die. The increased enzyme activity of telomerase seen in various cancers allows

senescent cells to escape the death crisis and gain cellular immortality.

Senescent cells that should be programmed for an apoptotic death also often escape the death crisis through a deletion of the p53 gene (Choisy-Rossi & Yonish-Rouach 1998), which thus removes another component of their

genetically mediated normative inhibition. Immortality for a single cell, either through a deletion of the p53 gene or through an up-regulation of the gene for telomerase enzyme activity, acts as the harbinger of death for the whole organism since life for the whole organism demands death from each cell.

The multidomain inhibition mechanism controls the expressive capacity of DNA (see Table 1). However, this control may be normative or not – healthy or a trigger for illness. In the latter situation, the control can be excessive, or, globally, inhibition may fail entirely. The two nonnormative states – excessive or failed inhibition – antagonize the normative state, and collectively, I have proposed, constitute a carcinogenic risk factor because they impede autonomic autopoiesis. The aim of our autonomic autopoiesis work is to bring about changes on many levels of body and mind that restore normative inhibition.

Women who are at high risk for developing breast cancer and women with breast cancer are both oriented in our work to the relationships between certain disturbing interpersonal and intrapsychic behavior patterns and certain physiological behaviors. As our collaborative work progresses, each patient gradually learns about her own unique patterns of interpersonal and intrapsychic behaviors. With this knowledge, we work out a process through which she can reclaim her inner homeostasis by altering these personal behaviors.

We call our cancer survivorship services “wellnesscare,” in contrast to the current “healthcare” model. Our aim is to assist our clientele to reset and promote an internal normative, innate, genetic inhibition. At the heart of our practice of wellnesscare is emotional disclosure as a primary method of resetting and promoting normative inhibition. In a generic sense, the promotion of normative inhibition is an example of wellness-promoting self-regulation. From a functional perspective, normative inhibition is a state of self-regulation, which, I believe, ultimately provides a controlling influence over the expressive capacity of DNA.

In broad terms, the interactive and synergistic daily mix of genomic stability/instability, dysfunctional/re-educated physiological systems, and impaired/improved self-regulation would collectively impact the putative multidomain inhibition mechanism, resulting in illness or in health as dynamic processes of life. Like Traue and Deighton, I believe that the key is inhibition. Disclosure serves, I propose, as an integral component of processes whose end result is the resetting of normative inhibition.

I am in agreement with Pennebaker and the several commentators that disclosure, inhibition, cognitive processing, and social dynamics are likely all interwoven in producing the beneficial effects of disclosure on health. I would add only

Table 2 Extraordinary versions of basic human attributes. This list identifies some extraordinary possibilities of some ordinary human attributes.

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- Alterations in bodily structures, states, and processes
 - Extraordinary movement abilities
 - Supra-abundant vitality
 - Extraordinary awareness and regulation of our bodies
 - extraordinary perception of things outside of the body; voluntary clairvoyance
 - ability to influence things at a distance
 - delight not dependent upon satisfaction of desires and needs
 - extraordinary cognitions
 - extraordinary communication abilities
 - volition that unifies separate impulses yielding extraordinary actions
 - personhood that simultaneously transcends and fulfills ones ordinary sense of self
 - love that transcends ordinary needs

that the manner in which they are interwoven can give us new directions for study and future research. We live only part of the life we are given. Growing acquaintance with once-foreign cultures, new discoveries about our subliminal depths, and the dawning recognition that each social group reinforces just some human attributes while neglecting or suppressing others have stimulated an understanding that all of us have a great potential for growth (Murphy 1992).

Currently, discoveries about our developmental possibilities are scattered across the intellectual landscape. By gathering data from many dimensions and fields, we can identify extraordinary versions of most, if not all, of our basic attributes (see Table 2 for examples). These attributes can be cultivated, incorporated into integral transformative practices (to use the term coined by Murphy), and offered as adjunctive treatments for our chronic degenerative illnesses.

Conclusions

I would suggest that the philosophy behind the self-cultivation process might follow the definition of philosophy as given by the British philosopher C. D. Broad (1953):

Philosophy involves at least two other closely connected activities, which I call Synopsis and Synthesis. Synopsis is the deliberate viewing together of aspects of human experience which, for one reason or another, are generally kept apart by the plain man and even by the professional scientist or scholar. The object of synopsis is to try to find out how these various aspects are interrelated. Synthesis is the attempt to supply a coherent set of concepts and principles which cover satisfactorily all the regions of fact which have been viewed synoptically.

We might call the transformative practices at which our treatment program aims a synoptic, multidisciplinary, or integral empiricism, joining different fields and kinds of human experiences, and attempting to specify certain relations among them. Thus, in our practice, we elicit disclosure using the State Specific Sense of Coherence Assessment as the basis for our integral empiricism, and what is disclosed is then used as a template for reorganization and transformative

growth. As disclosure contributes to autonomic autopoiesis, and with phytochemotherapeutics as an adjunct, normative inhibition is promoted leading to improved health and well-being.

Finally, emotions such as love appear to promote normative inhibition, which may be the prototype for a type of “contact inhibition” seen in cell communities of organs functioning in harmony to serve the whole. In loving relationships, people join together for the benefit of the whole, and the whole defines the normative state of inhibition, the state most compatible with health and high-level wellness.

I view loving experiences as the prototype of normative inhibition, and as a force that is central to our day-to-day experiences of life as we move into the twenty-first century. Research will demonstrate, I believe, that with loving relationships as the core of a cancer treatment program, and with the restoration of normative inhibition as the focus of the treatment, treatments of many types will be more effective, and the results more meaningful and longer lasting. This model for cancer survivorship research will assist in meeting the challenges of the new millennium, as well as capture the opportunities that can flow from love-activated transformation.

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