

**Optimizing the Human Condition with Psychosocial Genomic Star Maps
Implicit Processing Heuristics in the 4-Stage Creative Cycle**

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Abstract

This review surveys 40 years of the theory, research and practice of utilizing implicit processing heuristics for facilitating the psychosocial genomics of consciousness and health research. We introduce a new set of psychosocial genomic concepts on all levels from mind to experience-dependent gene expression and brain plasticity. We illustrate how to map the 4-Stage creative cycle onto the 90-120 minute basic rest-activity cycle to reduce stress and facilitate top performance. We explore how to use the novelty-numinosum-neurogenesis-effect and the self-observer for optimizing memory, new learning and integrating the mind. We identify a number of student and professional research projects for optimizing the human condition with novel psychosocial genomic star maps that point the way to rehabilitation from addictions, depression, stress and psychosomatic issues.

Key words: Addictions, brain plasticity, consciousness, creativity, hypnosis, novelty-numinosum-neurogenesis-Effect, psychosocial genomics, rehabilitation, sleep, stress.

Introduction

We explore emerging psychosocial genomic perspectives that are evolving from ancient cultural, spiritual and meditative practices into the modern neuroscience of facilitating the 4-Stage creative cycle for optimizing the human condition. We begin by making a clear distinction between the phenomenology of consciousness studies in historical *Classical Dissociative Hypnosis* and current research in the *Creative Psychosocial Genomics of Healing*. Classical dissociative hypnosis as first formulated by James Braid in 1856 was concerned with understanding a number of seemingly strange experiences of sleep-like consciousness. Later research on the development of the academic scales of hypnotic susceptibility such as the Stanford and Harvard scales attempted to define modern hypnosis within a number of classical statistical parameters such as those listed in Table one (Weitzenhoffer & Hilgard, 1959).

Classical Dissociative Hypnosis (5 to 7 %) Creative Psychosocial Genomic Healing (100%)	
DISSOCIATIVE HYPNOSIS	PSYCHOSOCIAL GENOMICS
Agnosia (not knowing)	4-Stage Creative Process
Amnesia	Consciousness Creation
Time Distortion	Mental Absorption
(+) & (-) Hallucinations	Ideo-Dynamic Experiencing
Dreams: Age Regression	Dreams: Future Adaptation
Loss of Self Control	Self-Empowerment
Posthypnotic Compulsion	Self-Prescriptions

Table 1: The Contrast between Classical Dissociative Hypnosis and Naturalistic Therapeutic Hypnosis and the Creative Psychosocial Genomic Healing Experience. Classical Dissociative Hypnosis is based on relatively fixed trait *genetic research* (Lichtenberg *et al.*, 2000, 2004; Weitzenhoffer & Hilgard, 1959). Psychosocial Genomics is based on *epigenomic research* in circadian and basic rest-activity cycles (Cozzolino *et al.*, 2014; Lloyd & Rossi, 1992, 2008).

Research in the construction of these academic scales for objective research established that from a statistical point of view only 5 to 7 % of the general public could experience the deep hypnotic phenomena of classical dissociative hypnosis defined as manifestations of altered states of consciousness. Lichtenberg *et al.* (2000, 2004) documented how the catechol-O-methyltransferase (COMT) gene is associated with classical dissociative hypnotizability in Table one. This research now requires replication with more detailed current genomic investigation. While Milton H. Erickson MD explored classical dissociative hypnosis early in his career, he believed there was something more involved in therapeutic hypnosis (Rossi, Erickson-Klein & Rossi, 2008-2014). Erickson’s understanding of the nature, origins and applications of therapeutic hypnosis was clearly expressed on page one of *Hypnotic Realities* (Rossi, 1976/2010) as follows:

It will be seen on the following pages that clinical hypnosis and therapeutic trance (using these terms synonymously) are carefully planned extensions of some everyday processes of everyday living. Without quite realizing it, we all experience the “common everyday trance” wherein we are absorbed in moments of inner reverie or preoccupation. During such periods we go about our daily routine somewhat

automatically; much of our attention is actually focused inward as we experience ourselves a bit more deeply and possibly gain a fresh perspective or even solve problems. Similarly, in a clinical utilization of trance we can be more receptive to our own inner experience and unrealized potentialities in ways that are most surprising. With the help of a therapists' suggestion, these potentials may be explored and further developed.

Erickson's original words for the common everyday trance were "*the segmentalized trance,*" to emphasize how such trance was only a small segment in the normal flow of conscious experience in everyday life. The housewife taking a brief pause in her daily routine by sipping a cup of coffee with far away looking eyes is experiencing the common everyday trance. A passenger in a bus or train station might be sitting very still apparently reading a newspaper for 5, 10 or even 20 minutes then quietly blink, shrug, ruffle the paper, look at the time and seemingly come awake. *We proposed that Erickson's genius was in recognizing how this so-called "segmentalized trance" that occurred in normal everyday life when people were bored or tired could be utilized during the more conscious ongoing flow of the psychotherapeutic process* (Rossi, 2002). The final chapter of *Hypnotic Realities* is a summary of the essence of the empirical observations and therapeutic interventions Erickson developed for recognizing and utilizing the common everyday trance by reframing it into his naturalistic approach to therapeutic hypnosis.

This is the little known secret of understanding Erickson's success in resolving human problems and psychosomatic issues with the so-called 'indirect approaches' to hypnotic suggestion during the common everyday trance. Today we prefer to call Erickson's indirect approaches "creative implicit processing heuristics" to emphasize how they function as hints or stimuli for facilitating the emergence of new consciousness out of the person's nascent unconscious dynamics of activity and experience-dependent gene expression and brain plasticity. We review the simple questions and statements that can function as implicit processing heuristics for optimizing each stage of the 4-stage creative cycle of mind-body healing and problem solving with psychosocial genomics.

Mind-Body Healing, Basic Rest-Activity Cycle and Psychosocial Genomics

Our daily experience of Erickson's "common everyday trance" really is so ordinary, however, that most people do not recognize its significance on a deep psychobiological level. It required four more decades of international research (Lloyd & Rossi, 1992, 2008) and clinical practice (Rossi, 1993, 2002) to document how the common everyday trance is actually a manifestation of

the low phase of the 90-120 minutes basic rest-activity cycle in normal everyday life (Rossi, 2007, 2012; Rossi & Rossi, 2013). This led to the formulation of “The Mind-Body Healing Experience (The MHE Protocol),” also called “The Creative Psychosocial Genomic Healing Experience,” to emphasize how it integrates the psychological level with the molecular-genomic level on the right hand side of Table one (Rossi, Erickson-Klein & Rossi, (2014). A comparison of the altered state qualia of Classical Dissociative Hypnosis with those of the Creative Psychosocial Genomic Healing Experience illustrates the constructive and therapeutically focused orientation of the latter. The next section reviews recent research on the nature of sleep and its relationship to psychosocial genomics for optimizing a wide range of existential states of consciousness, creativity, problem solving and general health.

Why Do We Sleep?

Truly revolutionary neuroscience research on why we sleep by Xie *et al.* (2013) was described by Underwood (2013) in this way.

Every night since humans first evolved, we have made what might be considered a baffling, dangerous mistake. Despite the once-prevalent threat of being eaten by predators, and the loss of valuable time for gathering food, accumulating wealth, or having sex, we go to sleep. Scientists have long speculated and argued about why we devote roughly a third of our lives to sleep, but with little concrete data to support any particular theory. *Now, new evidence has refreshed a long-held hypothesis: During sleep, the brain cleans itself.*

Most physiologists agree that sleep has come to serve many different purposes, ranging from memory consolidation to the regulation of metabolism and the immune system. While the "core" purposes of biological functions such as breathing and eating are easy to understand, however, scientists have never agreed on any such original purpose for sleeping. The new study, by Maiken Nedergaard and colleagues at the University of Rochester in New York, provides what Charles Czeisler, a sleep researcher at Harvard Medical School in Boston, calls the "*first direct experimental evidence at the molecular level*" for what could be sleep's basic purpose: *It clears the brain of toxic metabolic byproducts.*

The new work, reported by Xie *et al.* (2013) "fits with a long-standing view that sleep is for recovery—that something is paid back or cleaned out," says David Dinges, a sleep researcher at the University of Pennsylvania. It builds on Nedergaard's recent discovery,

described last summer in *Science Translational Medicine*, of a network of microscopic, fluid-filled channels that clears toxins from the brain, much as the lymphatic system clears out metabolic waste products from the rest of the body. Instead of carrying lymph, this system transports waste-laden cerebrospinal fluid (CSF). Before the discovery of this "glymphatic system," as Nedergaard has dubbed it, is the brain's only known method for disposing of cellular trash was to break down and recycle it within individual cells, she says. (*Italics added here*, Underwood, 2013, p.301)

This new research on *Why We Sleep* (Xie *et al.* 2013; Herculano-Houzel, 2013) documents how during sleep there is 60% more clearing of the brain of toxic metabolites by cerebral spinal fluid. We now propose that this process of clearing the brain during sleep also occurs during the healing/rest phase of the 90-120 minute Basic Rest-Activity Cycle (BRAC) in the creative psychosocial genomic healing experience illustrated in Figure one.

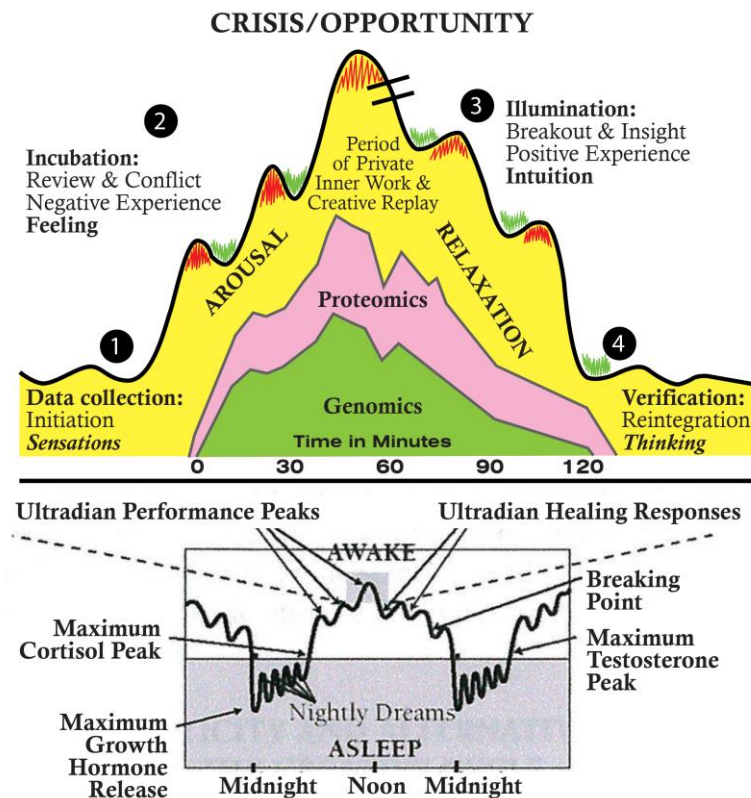


Figure 1. Psychosocial Genomics outlined as a profile of the 4-Stage creative process mapped onto the normal 90-120 minute 4-Stage basic rest-activity cycle (BRAC) is illustrated in yellow in the upper curve. The proteomics (protein) pink profile in middle curve depicts the energy landscape for protein folding within neurons of the brain into the correct structures needed for adaptive brain plasticity (adapted and redrawn from Cheung *et al.*, 2004). This proteomic profile arises from the functional concordance of co-expressed genes illustrated by the green genomics profile below it (Levsky *et al.*, 2002). This psychosocial

genomics curve represents the actual gene expression profiles of the immediate-early gene *c-fos* and 10 other genes (alleles) over the typical Basic Rest-Activity Cycle of 90-120 minutes. The lower diagram illustrates how the qualia of consciousness cognition and behavior are typically experienced within the normal circadian cycle of waking as well as during REM dreams while sleeping (Rossi, 2002, 2004; Rossi & Nimmons, 1991).

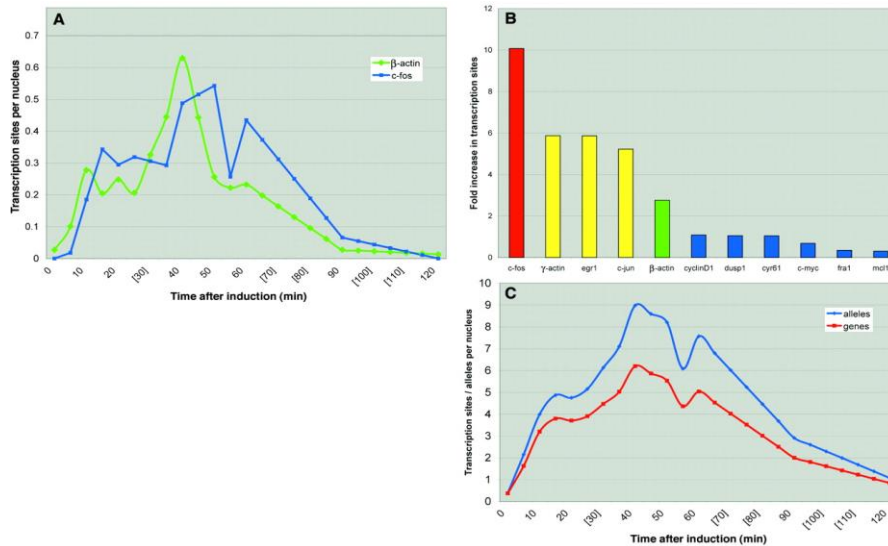


Figure 2. The functional concordance of co-expressed genes research pioneered by Levsky, *et al.*, (2002). We now propose that such adaptive gene complexes underpin the normal circadian and ultradian cycles of psychosocial genomics. Further investigation is now required to explore how these and related genes may be mapped onto the 90-120 minute 4-Stage Basic Rest-Activity Cycle (BRAC) and the 4-Stage Creative Cycle for optimizing the human condition in everyday life. We hypothesize that such psychosocial epigenomic dynamics are the modern scientific foundation for many ancient cultural traditions of holistic healing such as meditation, yoga, therapeutic hypnosis, pastoral counseling and psychotherapy.

Recent research has documented how the overall domain of therapeutic hypnosis is actually a combination of high and low hypnosis (Rossi, 2002) that is illustrated in Figure three.

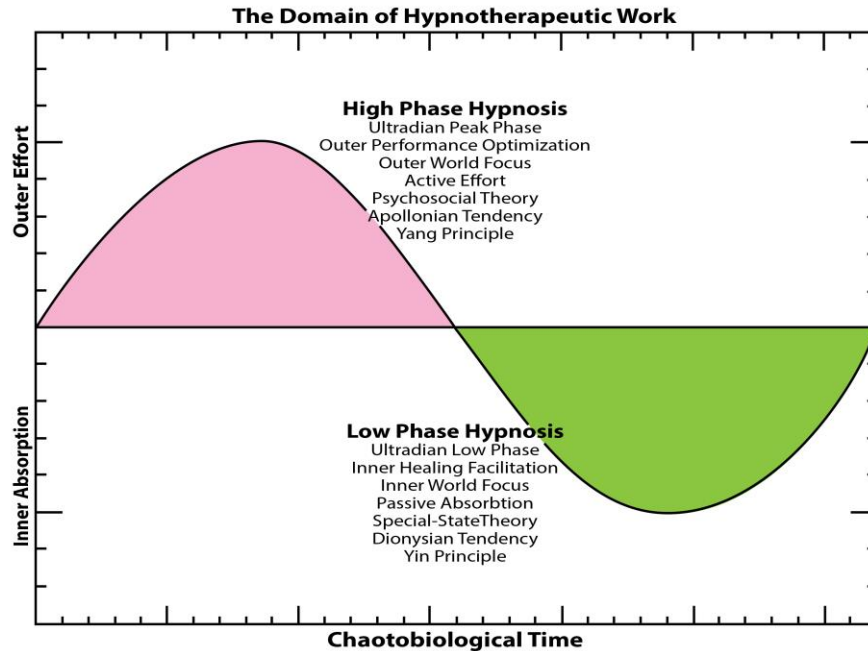


Figure 3. We propose how the qualia of subjective experiencing during the high and low phases of therapeutic hypnosis can be conceptualized as manifestations of the 4-Stage Creative Cycle mapped onto the 90-120 minute Basic Rest-Activity Cycle (BRAC) and many other psychobiological rhythms about 12 times a day in normal everyday life (Lloyd & Rossi, 1992, 2008; Rossi, 2002).

Each BRAC represents one transcription/translation cycle on the molecular/genomic level, which generates the proteins (neuro-hormones, neuro-transmitters, etc.) and brain plasticity that form the neural networks that are experienced as new consciousness. An introduction to the mathematical details of how this BRAC model of the 4-Stage creative cycle are subjectively experienced as alternating rhythms of consciousness when we are awake and during REM dreaming while asleep has been presented (Rossi & Rossi, 2014a,b, 2015 in press).

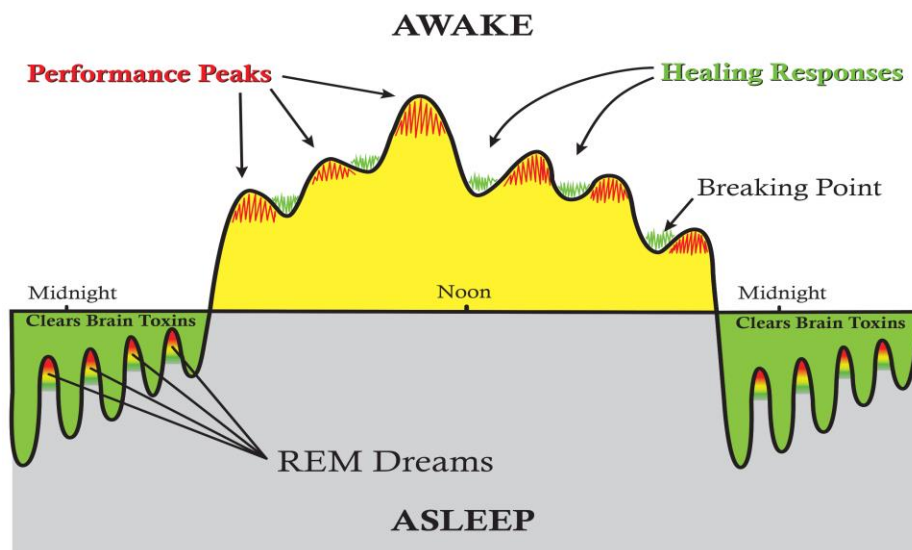


Figure 4. An overview of the alternating circadian cycles of peak performance and healing rest while awake and during REM dreaming for optimizing the human condition. *The Breaking Point* is when there is a profoundly important shift in circadian gene expression from those that support consciously oriented day time outer world activities to genes that facilitate sleep, nurture, healing, memory and clearing the brain of toxic metabolites (Jensen *et al.* 2012; Rossi, 2002; Xie *et al.* 2013).

An overview of how we can conceptualize the 90-120 minute BRAC and entire 24 hour circadian cycle of peak performance and healing response while awake during the day and during REM dreaming while asleep in Figure four illustrates how the rest/healing phases in green color during sleep also occur for about 20 minutes during the ultradian healing responses during the day. Likewise, notice how the alternating periods of top performance are illustrated with the red color throughout the day and in our dreams during the rainbow of REM sleep. We hypothesize that each color of the rainbow of dreams could represent a different psychogenomic perspective of the observer function of dreams. We propose that this subtle symmetry between the apparent inversions (or opposites) of being awake and being asleep could account for many ancient holistic traditions of healing as well as the “healing placebo” that can take place naturally as a dialogue between consciousness, cognition and experience-dependent genes to catalyze the novelty-numinosum-neurogenesis effect (NNNE) during the ultradian healing response (Rossi, 2002).

The choice people can make to select either the Ultradian Stress Response or the Ultradian Healing Response every 90-120 minutes during the day as is outlined in Table two. Most people are not entirely aware of how they can arrange their lives to select how they would like to experience the low phase of the BRAC for about 5 to 10 or 20 minutes when they take a brief restorative snooze. A snooze could be a very light sleep when fantasies, REM dreaming, altered states of consciousness, epiphanies or meditative states of wisdom and well-being characteristic of the 4-stage creative cycle may be experienced. We proposed how such transformative states of consciousness, cognition and creativity are psychosocial epigenomic expressions of the RNA/DNA transcription/translation cycle of creating new consciousness (Rossi, Mortimer & Rossi, 2015 in press; Rossi & Rossi, 2011, 2013, 2014a &b, 2015 in press).

These healing states are fragile, however. Many and perhaps most such transitional/transcendent states of consciousness are either immediately forgotten when the person comes fully awake or derisively dismissed as mere fantasies or foolish daydreams. In the pathological extreme this attitude toward nature’s creative symbolic inner work of self-transformation could harden into common everyday cynicism and resistance to the novelty-numinosum-neurogenesis-effect.

THE ULTRADIAN HEALING RESPONSE	THE ULTRADIAN STRESS SYNDROME
1. <i>Recognition Signals:</i> An acceptance of nature's call for your need to rest and recover your strength and well-being leads you into an experience of comfort and thankfulness.	1. <i>Take-a-Break Signals:</i> A rejection of nature's call for your need to rest and recover your strength and well-being leads you into an experience of stress and fatigue.
2. <i>Accessing the Deeper Breath:</i> A Spontaneous deeper breath comes all by itself after a few moments of rest as a signal that you are slipping into a deeper state of relaxation and healing. Explore the deepening feeling of comfort that comes spontaneously. Wonder about the possibilities of mind/gene communication and healing with an attitude of "dispassionate compassion."	2. <i>High on your Hormones:</i> Continuing effort in the face of fatigue leads to the release of stress hormones that short-circuits the need for ultradian rest. Performance goes up briefly at the expense of hidden wear and tear so that you fall into further stress and a need for artificial stimulants (caffeine, nicotine, alcohol, cocaine, etc.).
3. <i>Mind-Body Healing:</i> Spontaneous fantasy, memory, feeling-toned complexes, active imagination, and numinous states of being are orchestrated for healing and life reframing.	3. <i>Malfunction Junction:</i> Many mistakes creep into your performance, memory, and learning; emotional problems become manifest. You may become depressed or irritable and abusive to yourself and others
4. <i>Rejuvenation and Awakening:</i> A natural awakening with feelings of serenity, clarity, and healing together with a sense of how you will enhance your performance and well-being in the world	4. <i>The Rebellious Body:</i> Classical psychosomatic symptoms now intrude so that you finally have to stop and rest. You are left with a nagging sense of failure, depression and illness

Table 2. Most people are unaware of the choices they have between the BRAC experienced as either the Ultradian Healing Response or the Ultradian Stress Response every 90-120 minutes throughout the day (Rossi & Nimmons, 1991).

We previously proposed a mathematical model of how these alternating dynamics of the BRAC and the 4-Stage creative cycle are mediated by the dynamics of the RNA/DNA theory of mind-body communication and healing (Rossi & Rossi, 2014 a, b). The classical/quantum dynamics from mind to gene transcription and translation are illustrated in greater detail in Part four and Part five of volume 15 of the Collected Works of Milton H. Erickson (Rossi, Erickson-Klein & Rossi, 2014). Figure five summarizes how ongoing psychosocial genomic research documents the top-down role of consciousness and implicit processing heuristics in optimizing experience-dependent gene expression, brain plasticity and the creation of new consciousness (Rossi, 2002; Rossi & Rossi, 2013, 2014 a & b, 2015 in press). These are the essential dynamics of the reconstruction of fear, stress, and post-traumatic problems that can be resolved via the 4-stage creative cycle during the BRAC via the common everyday trance.

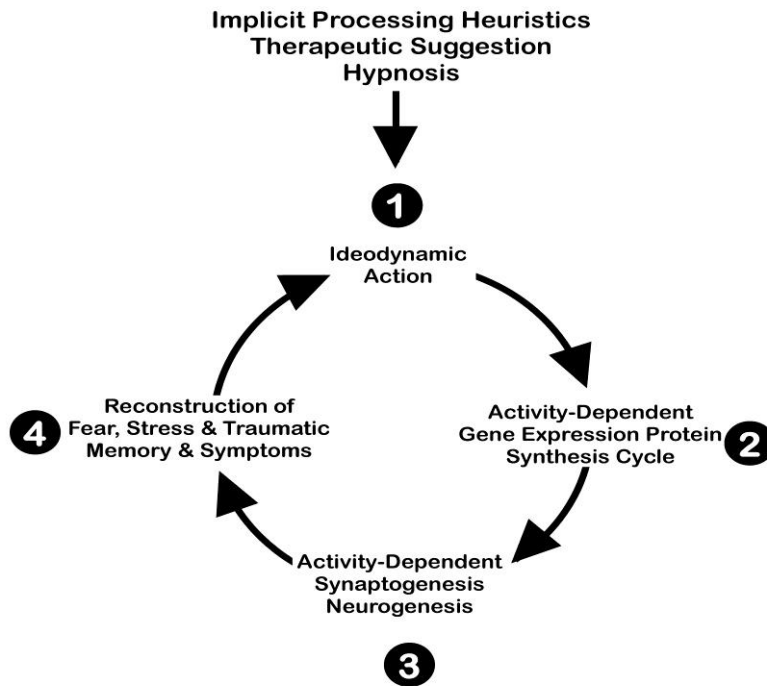


Figure 5. An illustration of how to map 4-Stage creative cycle onto the 90-120 minute basic rest-activity cycle (BRAC) of normal everyday life for facilitating the resolution of life transition crisis/opportunity situations that motivate most people to seek professional help.

Optimizing the Human Condition with the Four-Stage Creative of RNA/DNA Transcription/Translation Cycle

Stage 1. Optimizing the Four-Stage Creative Cycle in the Initial Interview

The molecular-genomic RNA/DNA transcription/translation cycle of creating new consciousness begins with the typical history taking at the beginning of psychotherapy. The typical tears and distress of an initial interview indicate how the person is already accessing state dependent memory and emotional arousal to signal they are already embarking on a potentially therapeutic adventure of experience-dependent gene expression, brain plasticity and life transformation. Here are a few examples of implicit processing heuristics for priming this first stage of the creative therapeutic process.

Implicit Processing Heuristics Initiating Inner Search and Creative Play

- When you are ready to focus inward on that problem (issue, symptom), what will you actually experience as you review its sources and history?
- Can you let yourself continue experiencing that for another moment or two in a *private* manner... only long enough to experience what it leads you to next...?
- Good, can you replay that *privately* again to learn what it is all about...?
- Will it be okay to allow yourself to continue replaying that *privately* for a while, difficult though it may be, so you can learn what you need to do for a possible solution...?

Facilitating memory, inner review and dramas of creative replaying important transitional life changes focuses the person's attention on emergent experiences of implicit processing while reducing the so-called "resistance." *Privacy* greatly enhances the person's ability to access sensitive emotional issues without being concerned about how to verbalize them for the therapist. This allows subjective material to remain closer to its original implicate unconscious/preconscious states allowing nascent sensations, emotions, imagery, intuitions and new perspectives to emerge in personally meaningful ways. People are empowered to discover the qualia and style of their unique creative experiences during the 90-120 minute natural basic rest-activity cycle of activity-dependent gene expression and brain plasticity.

Stage Two: Incubation. The Dark Night of the Soul.

This is the valley of shadow and doubt, or "*The Storm before the Light*" so characteristic of the human condition that is portrayed in the dramas of poetry, myth, song and spiritual rituals in many cultures. The creative paths outlined here facilitate *precognitive implicate processing* and *information transduction* so that the person's inner nature can signal when autonomous inner processes of mind-body communication & problem solving are taking place. *The therapist's main job during this second stage is (1) to offer open-ended implicit processing heuristics to access state dependent memory encoding symptoms and (2) to support the person through the sometimes painful arousal that makes them abort their natural ultradian cycle of creativity, problem solving and healing in everyday life.* Less is often more at this stage of respectful listening rather than the therapist offering premature analysis, counseling, programming or advice giving.

The therapist's main task during Stage 2 is to encourage the person to creatively replay past problems, stress, and traumas within the safety of the therapeutic situation. This prepares the person to move on to the third stage of the creative process: the moment of illumination wherein people may experience a new insight about their experience. This shift between Stage 2 and 3 of the creative cycle is often mediated by a particularly focused period of inner concentration

wherein the person seems to suddenly become quiet after a stressful period of arousal and conflict. This is usually a period of private creative inner work where it is usually important for the therapist to remain silent lest the person's concentration is broken.

When the person begins to manifest the inevitable emotions of distress or asks for help, the therapist can immediately provide it with another appropriate implicit processing heuristic. How does the therapist come up with an appropriate implicit processing heuristic? What can any therapist really know about what is going on in the person on so many levels simultaneously from imagery, emotion and cognition all the way to gene expression and brain plasticity? Who is the therapist who feels wise enough to take control, direct, and program the person on these molecular/genomic levels? This is an impossible task and a major source of stress for the therapist hapless enough to believe that is their task. At best the therapist can manifest at least some aspects of wisdom by responding to the person's confusion, disruptive emotions and requests for help by focusing the person's inner work with non-directive but encouraging and safe time-binding implicit processing heuristics delivered in 3 or 4 steps somewhat as follows

Implicit Processing Heuristics for Facilitating Stage Two of the Creative Cycle

1) Yes, I really want to help you... [pause]

(2) *Allow yourself to experience those feelings just for another moment or so...* [pause]

(3) Until you find yourself expressing a sentence or two... [pause]

(4) About what I need to hear to help you further?

Another Example:

(1) Yes, continue *for just another moment* ... [pause]

(2) *Letting yourself* carefully consider what kind of help you want... [pause]

(3) And sharing it with me with a sentence or two if you need to... [pause]

(4) So I can help you in every way I can.

Notice how much is being accomplished with these seemingly simple implicit processing heuristics.

First, the therapist is responding positively and supportively to the person's creative distress and request for help by immediately saying, "Yes."

Second, the therapist is facilitating the person's ongoing creative experience with a safe time-binding limitation: "**Just for another moment or so.**"

Third, there is a mild therapeutic dissociation implied in the words **“allow yourself continue with those feelings.”** When you *“allow yourself,”* implies there is another more adequate part of the person’s consciousness, their inner observer that is allowing their dependent, hurt, and needy side to express itself. Since you are *“letting yourself,”* it means that the people are no longer lost in emotional chaos and despondency over which they have no control. People are encouraged to maintain an internal locus of control by *allowing* the emotional experience to take place within their own self-directed therapeutic process.

Fourth, the therapist is, by implication, permissively asking the person to do a major piece of therapeutic work with words such as: **“Find yourself sharing a sentence or two.”** This permissive attitude implies that people are able to self-reflect on their inner experience and co-create an adequate report about it. The therapist responds to whatever the person says by feeding it back to the person to facilitate accessing their inner resources for problem-solving. Suppose the person says something like: “I feel blocked just like I have all my life when I feel hopeless about my feeling. Can’t you help me break through this block?”

What therapist does not feel some creative uncertainty about how to help a person break through a lifetime block within the limits of a typical therapeutic session? Since emotions are usually high in Stage 2, the therapist could respond to such direct but daunting requests for help by creating a 4-step implicit processing heuristics that utilizes the affect bridge to access the state-dependent dynamics of the source of problems that may contain the seed of their own resolution (Watkins, 1978).

Implicit Processing Heuristics Utilizing the Affect Bridge

- (1) Yes, I want to help you break through that block... [pause]**
- (2) Can you allow yourself to experience another time in your life... [pause]**
- (3) When you found yourself with these kinds of feelings... [pause]**
- (4) And share just a sentence or two so I can understand how to help?**

A typical but easily misunderstood emotion that frequently surfaces during Stage 2 is anger. Anger can have unfortunate consequences when it is misunderstood by blaming and hating others, which invariably leads to conflict and war – or blaming one’s self, which leads ultimately to depression. Anger seems to be a “lose-lose” tragedy of the human condition until it is understood as nature’s way of generating energy (the initial stage of so-called “stress hormones” like adrenaline and cortisol). People need to learn how to use the energy release of anger to break down the walls of ignorance within themselves as well as others. It often requires some help

from the a calm but ingenious, experienced and well trained therapist to inspire the novelty-numinosum-neurogenesis effect within the angry person to evoke memories of the past when he/she experienced righteous anger but somehow learned to express and resolve it appropriately in metaphorical dragon fights. Such metaphorical battles are the essence of the “period of private inner work and creative replay” illustrated in Figure one, which is so characteristic of the successful transition between Stage 2 and 3 of difficult transformations of consciousness and life.

Recent research has documented how this sometimes difficult stage 2 of the creative cycle is important for therapeutic change (Crane, 2014). Kappes & Oettingen (2011), for example, express their reservations about the current overemphasis on positive psychology with its avoidance of the reality of anger and acknowledgment difficult conflicts in this way.

Positive fantasies allow people to mentally indulge in a desired future. Whereas previous research found that spontaneously generated positive fantasies about the future predict poor achievement. We examined the effect of experimentally induced positive fantasies about the future. The present four experiments identify low energy, measured by physiological and behavioral indicators, as a mechanism by which positive fantasies translate into poor achievement. Induced positive fantasies resulted in less energy than fantasies that questioned the desired future (Study 1), negative fantasies (Study 2), or neutral fantasies (Study 3). Additionally, positive fantasies yielded a larger decrease in energy when they pertained to a more rather than a less pressing need (Study 4). Results indicate that one reason positive fantasies predict poor achievement is because they do not generate energy to pursue the desired future...

Generally speaking, energy facilitates the accomplishment of difficult tasks. The present four studies indicate that positive fantasies about an idealized future diminish energy, which should hamper achievement on such tasks. Although it is tempting to believe that simple positive visions can engender actual success, this belief is not always justified. Instead of promoting achievement, positive fantasies will sap job-seekers of the energy to pound the pavement, and drain the lovelorn of the energy to approach the one they like. Fantasies that are less positive – that question whether an ideal future can be achieved, and that depict obstacles, problems, and setbacks – should be more beneficial for mustering the energy needed to attain actual success. (pp. 719–729)

These concerns are reflected in our Figures 1, 2, 3 and 4 where we focus on the difficulties of facilitating a successful transition between Stage 2 and 3 of the creative cycle. During Stage 2

people must engage themselves in the real work of resolving their real life problems. It is precisely here that psychosocial genomic research is now urgently needed to identify precisely what implicit processing heuristics can turn on the most efficacious molecular-genomic pathways for optimizing the Four-Stage Creative Cycle of RNA/DNA Transcription/Translation dynamics of brain plasticity and new consciousness for problem solving (Shelke & Piccirilli, 2014).

The therapist's main task during Stage 2 is to encourage the person to creatively replay memories of past problems, stress, and traumas within the safety of the therapeutic situation. This shift between Stage 2 and 3 of the creative cycle is often mediated by a particularly focused period of inner concentration wherein the person seems to suddenly become quiet after a stressful period of arousal and conflict. This is usually a period of private creative inner work where it is important for the therapist to remain silent lest the person's concentration is broken. This prepares the client to move on to the third stage of the creative process: the aha moment of insight wherein people experience a new understanding about their difficulties in the light of their best observer self.

Step Three: Aha! Illumination. Creative Insight, Problem Solving & Healing.

This the famous "Aha" or "Eureka" experience celebrated in ancient and modern literature when the creative process is described in the arts and sciences. Some people have problems because are usually surprised when they receive a creative thought and tend to automatically dismiss their own originality as worthless since it has never been reinforced in their early life experience. The therapist's main job at this stage is to help the person recognize and appreciate the value of the "new" that usually emerges spontaneously and unheralded. Often the person may have already thought of the options that come up for problem solving at this stage but dismissed them since their inner self observer was never validated. Here are a few simple words that function as implicit processing heuristics that can help people recognize, value, and continue to explore their positive creative insights at this stage.

**Implicit Processing Heuristics Facilitating and Stabilizing Stage Three
Insights and Creative Reframes**

Interesting...?

Curious isn't it...?

A little surprise...?

Umm - rather unexpected somehow...?

Yes, are you experiencing something a little different now...?

My goodness, is something really changing now...?

Experiencing the wonder of that...?

Mmm - really appreciating what continues all by itself...?

Okay to let yourself carefully observe and really appreciate that...?

Yes, you are learning how to simply mirror your inner observer...

The profoundly significant shift from the emotional crisis and catharsis of Stage 2 to the moments of insight, tension release and positive feeling in Stage 3 is often accompanied by a sense of relief, surprise and laughter. People often experience a dramatic transition/transformation from what Maslow (1962/1998) called the shift from “deprivation motivation” to “being motivation.” People may softly whisper, “*It’s wild, really strange, weird, odd!*” The usage of such words signifies that they are experiencing something novel in becoming acquainted with their inner objective observer that functions as a psychosocial genomic self that enhances the novelty-numinosum-neurogenesis-effect (Rossi, 2002). They may even mention, “*Something really new, something I was never aware of before suddenly popped into my mind.*” In the classical descriptions of the 4-Stage creative cycle a sense of lightness, illumination, colors or fascinating and meaningful visual imagery are frequently mentioned. Ingenious psychosocial genomic research is now required to document how these creative moments are precisely the point at which activity-dependent gene expression is replayed for neurogenesis and solution focused problem-solving. We need to further document how the new proteins and synaptic connections synthesized at the cellular-genetic level make their effects known on a conscious level as an original psychological experience. People replay such creative moments with a wide range of experiences ranging from silent wonder, joy and awe to spiritual gratitude. Some people are full of questions about these moments of creative experiencing and need the therapist’s continuing assurance that they can make a difference in their lives. The continuing mystery at this stage is how to select and safely try out in the real world what appears to be of value in these deeply experienced moments of beauty and being motivation.

Step Four: Verification and Follow Up. The therapist’s job here is to (1) facilitate a follow-up discussion to validate the value of the psychotherapeutic process and (2) reframe symptoms into signals and psychological problems into inner resources. The symptom scaling of the person’s state of being before and after the psychotherapy is a measure of progress, problem solving and healing that is used to validate the value of the therapeutic experience and what may need to be done in

future sessions. Here are a few implicit processing heuristics to facilitate the therapeutic process and bring it to an appropriate sense of completion toward the end of the session.

Implicit Processing Heuristics to Facilitate Continuing Creative Work

- 1. When... [pause]**
- 2. A part of you knows it can continue this creative work entirely on its own at *appropriate times throughout the day* ... [pause]**
- 3. And when your conscious mind knows it can simply cooperate in helping you recognize when it is *the right time to tune in*... [Pause]**
- 4. Will you receive a mind-body signal – a sensation or feeling that it’s time for you to stretch, open your eyes, and come fully alert so you can discuss whatever is necessary for this creative work to continue?**

Mentioning “appropriate times throughout the day” and “the right time to tune in” are ultradian cues that may utilize the entirely natural psychobiological Basic Rest Activity Cycle that takes place every 90–120 minutes throughout the day. Such phrases are implicit processing heuristics that may help people access the state-dependent encoding of behavioral state-related gene expression, brain plasticity, and problem solving that can take place most easily at “appropriate times.” Stage 4 is a period of returning to normal where therapist’s can indulge in their traditional role of suggesting behavioral prescriptions that are an important vehicle of change in talk therapy. Some therapists may prefer to maintain a wise attitude of restraint even here, however, and continue to encourage people to maintain the locus of choice and control within so that they can reframe, re-synthesize and co-create their own worldview, identity, and personality in their own way. Here are some implicit processing heuristics that may facilitate the person’s ability to co-create, that is, have creative dialogues wherein their explicit conscious experiences (words, feelings, motivations, and images) interact with their own more implicit, unconscious processing.

Implicit Processing Heuristics to Facilitate Co-Creation

- **Something you would like to share about that...?**
- **Yes, can you say more about it...?**
- **How much of this is new to you...?**
- **What is most significant about this for you...?**
- **Have you ever understood this before...?**
- **What does this lead you to now...?**
- **How will this experience help you to make changes in your life...?**

- **What will you actually do in your life that is different this week...?**

Verification of Positive Experiences in Stage Four:

People invariably feel good in Stage 4 with a sense of relief, happiness, and well-being. When symptom scaling was introduced in Stage 1, it can be re-evaluated in Stage 4 as a subjective experiential check on the process of change. Particularly when dealing with symptoms, Stage 4 is an important time to ask people to re-scale their symptom once more. The fact that their symptom is now usually less intense validates their therapeutic experience. If the symptom has disappeared completely, this is the time to plan how the person can learn to do this type of naturalistic problem solving at appropriate ultradian periods in everyday life. It is well to remind people that it is precisely when they are in their ultradian rest periods, when they are most likely to feel tired or discouraged, that they may have best access to this type of inner creative work (Rossi & Nimmons, 1991). In this way, symptoms can be reframed as signals that the mind-body needs a quiet period of inner problem solving and healing. We speculate that it is in the ultradian rest phase of the Basic Rest Activity Cycle that behavior state and activity-dependent gene expression, neurogenesis and healing may be taking place. This is the area in which we most urgently need the technologies of DNA microarrays and brain imaging to validate the value of our therapeutic work at the levels of the gene expression/protein synthesis cycle and brain plasticity.

If the symptom scaling has dropped only a few points by Stage 4, it can be taken as an indication of partial success that needs to be developed further in future sessions. To prepare for further improvement the person is encouraged to explore the ultradian healing response in everyday life and keep a written record of their experiences that can provide hints of the next step that is needed to facilitate further creative phase transitions in problem-solving. We like to remind people of how many natural ultradian cycles of creative inner work and healing on an implicit or unconscious level they will experience between sessions. If a person is coming in for therapy once a week, for example, we can mention the somewhat startling fact that they will go through at least 84 natural ultradian cycles between now and when they return for their next session. (7days times approximately 12 two hour ultradian rhythms a day yields 84 inner work sessions) The only thing they have to do is tune into them selves in a sensitive and sympathetic manner half a dozen times a day or so and simply take note of anything new that presents itself about their issues since the last time they tuned in. Nature is doing creative inner work of problem solving all the time. All people really need to do is to tune in now and then to notice if something numinous and new has come up that they need to recognize and facilitate.

Psychosocial Genomic Star Maps for Consciousness and Health Research

Possibilities for facilitating the psychosocial genomic evolution of the human condition were well illustrated by the Cozzolino *et al.*, (2014) exploratory research that unexpectedly found how a standardized administration of the *Creative Psychosocial Genomic Healing Experience* down-regulated the *SNCA* gene in human white blood cells. Dysfunctions of the *SNCA* gene are implicated in autism, schizophrenia, Parkinson's, Alzheimer's, alcoholism and a variety of age related stress disorders. On the positive side the closely related *SNCB* gene is associated with optimal brain plasticity, memory, learning and consciousness. Figure six illustrates how the *SNCA* gene (Pearl Color) and the *SNCB* gene (Blue Color) are close together in the center of a psychosocial genomic evolutionary complex adaptive system that now requires replication to document its validity and reliability for psychotherapy and translational medicine. Such beautiful 'genomic star maps' are freely available on the String 9.1 data base (<http://string-db.org>) to students and professional clinicians with a computer and the imagination to study the molecular/genomic relationships between activity and experience-dependent gene expression, consciousness, cognition, creativity and health. The colored lines that connect adaptive network of genes that are related by research relationships illustrated in the global perspective of Figure six. The STRINGdb package provides a user-friendly interface to the STRING protein-protein interactions database (Franceschini *et al.* 2013) <http://www.string-db.org>).

The problem with such purely biologically oriented molecular/ genomic data bases, however, is that they usually do not contain psychological data. To create truly *psychosocial genomic star maps of the human condition* we must integrate genomic (<http://www.genecards.org>), epigenomic (<http://www.ncbi.nlm.nih.gov/epigenomics>) and protein data bases (such as <http://www.bioconductor.org>) with psychological databases such as those found in (http://en.wikipedia.org/wiki/Databases_for_psychologists) and the Lloyd & Rossi (1992, 2008) volumes on the circadian and ultradian 90-120 Basic Rest-Activity Cycle (BRAC) mind-body rhythms. We propose that the hundreds of mind-body rhythms illustrated in these two Lloyd and Rossi volumes will have their own psychosocial genomic star maps. Students and professionals can explore the meaning and implications of psychological experience at the molecular/genomic levels for a lifetime of psychosocial genomic research – surely some of them will receive a Noble Prize for their profoundly significant research in understanding the human condition.

A delightful map of Contursi Terme—the village in Italy where a mutation in the α -synuclein gene led to a family history of Parkinson's disease, for example, can be found at <http://en.wikipedia.org/wiki/Alpha-synuclein> by simply inserting the term 'SNCA gene' in

Google. Contursi Terme is a village in the province of Salerno in the Campania region of southwestern Italy where the Cozzolino team of exploratory research was conducted. Replications of this pilot study by Cozzolino *et al.*, (2014) with larger populations and more adequate controls outside the Salerno area in Italy are now required to confirm how *The Creative Psychosocial Genomic Healing Experience* (also called *The MHE Protocol*, Rossi, Erickson-Klein, & Rossi, 2014, Part 4) could supplement the traditional pill-popping of translational medicine and the cognitive-behavioral dynamics of meditation, psychotherapy and naturalistic therapeutic hypnosis for ameliorating stress-related problems of ageing and other brain/behavioural dysfunctions. The implications of this research for updating the classical Cartesian philosophical issues of integrating mind and matter as well as the Chalmers hard problem of understanding the role of consciousness in mind-body communication and healing are profound for our currently emerging psychosocial genomic theory, research and practice of optimizing the human condition.

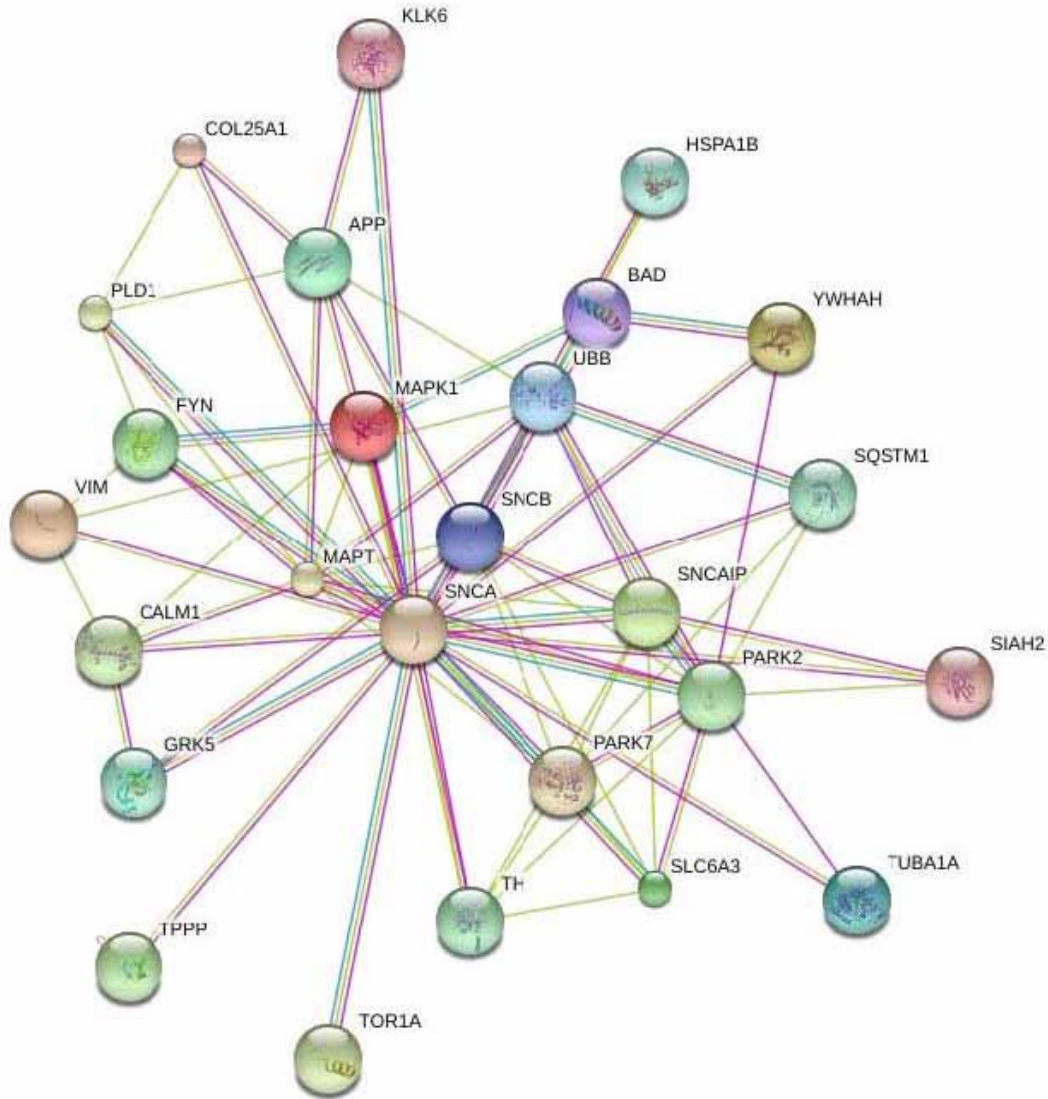


Figure 6. A Psychosocial Genomic Star Map of the SNCA/SNCB Twin Gene that has profound but still unknown implications for health, mind and the human condition.

Summary, Recommendations and Student Research Projects

This review emphasized how the evolution of the theory, research and practice of psychosocial genomics was generated out of Milton H. Erickson’s naturalist therapeutic trance and 40 years of research in the normal 90-120 minute basic rest-activity cycle of stress and healing in everyday life. We introduced a new set of psychosocial genomic concepts at all levels from mind to experience-dependent gene expression, brain plasticity and the creation of new consciousness. We illustrated how to map the 4-Stage creative cycle onto the 90-120 minute basic rest-activity

cycle to reduce stress and facilitate top performance. We illustrated how to utilize implicit processing heuristics as positive suggestions for facilitating consciousness and health in ordinary everyday life as well as meditation and psychotherapy. We now recommend these student and professional research projects in psychosocial genomics.

1. Update the contrast between Classical Dissociative Hypnosis and the Creative Psychosocial Genomic Healing Experience to identify the unique therapeutic genomic star maps of each.
2. Explore psychosocial genomics with free data bases such as Gene Pattern, GeneCards and Wikipedia for the associations between the Levsky research on the functional concordance of co-expressed genes that underpin the 4-Stage Creative Process and Cozzolino's research on the SNCA gene that may have profound implications for optimizing consciousness and brain health.
3. Document how each of the 4 Stages of the creative cycle has its own characteristic psychosocial genomic star map.
4. Demonstrate how the implicit processes heuristics used to facilitate each phase of the 4-Stage creative cycle can optimize the RNA/DNA transcription/translation cycle of generating new proteins and brain plasticity that underpin the emergence of new consciousness.
5. Identify psychosocial genomic star maps of the critical transition between Stage 2 and Stage 3 of the creative cycle when people must learn more effective personal strategies for engaging themselves in the real work of resolving their own real life problems.
6. Assess research on gene expression at the late afternoon Circadian Breaking Point to test the hypothesis that this is the vulnerable period of consciousness transition when people are fatigued and most prone to drug addictions in a futile effort to recover from the Ultradian Stress Response (see figures 1 & 4).

We believe that such psychosocial genomic research is now urgently needed to identify precisely what implicit processing heuristics can turn on the most efficacious molecular-genomic pathways for optimizing the 4-Stage Creative Cycle of RNA/DNA Transcription/Translation dynamics of brain plasticity and new consciousness for optimizing the human condition.

References

- Cheung M, Chavez L & Onuchic J (2004). The energy landscape for protein folding and possible connections to function. *Polymer* (45) 547–555.
- Crane M (2014). The differential impact of agency and pathway thinking on goal pursuit and university exam performance. *Personality and Individual Differences* (58) 20-25.

- Cozzolino M, Tagliaferri R, Castiglione S, Fortino V, Cicatelli A, Guarino F, Napolitano F, Raiconi G, Celia G, Fusco F, De Luca P, Rossi K, Rossi E & Iannotti S (2014). The creative psychosocial and cultural genomic healing experience: A new top-down epigenomic psychotherapeutic protocol. *The International Journal of Psychosocial Genomics: Consciousness and Health Research*. Vol. 1, (1), 18-26.
- Erickson M, Rossi S & Rossi E (1976/2010). *Hypnotic Realities*. NY: Irvington. Updated in 2010 *Volume 10, The Collected Works of Milton H. Erickson*. Phoenix, AZ: The Milton H. Erickson Foundation Press.
- Franceschini A, et al. (2013) STRINGdb Package Vignette. *Nucleic Acids Res.* (Database issue): D808-15. doi: 10.1093/nar/gks1094.
- Herculano-Houzel S (2013). Sleep It Out. *Science* (342) 316-317.
- Jensen L, Cao Z, Nakamura M et al. (2012). Opposing Effects of Circadian Clock Genes Bmal1 and Period2 in Regulation of VEGF-Dependent Angiogenesis in Developing Zebra fish. *Cell Reports Online Now*.
- Kappes H & Oettingen G (2011). Positive fantasies about idealized futures sap energy. *Journal of Experimental Social Psychology* (47) 719–729.
- Levsky J, Shenoy S, Pezo C & Singer R (2002). Single-cell gene expression profiling. *Science* (297) 836–840.
- Lichtenberg P, Bachner-Melman R, Gritsenko I & Ebstein R. (2000). Exploratory association study between catechol-O-methyltransferase (COMT) high/low enzyme activity polymorphism and hypnotizability. *American Journal of Medical Genetics*, 96, 771–774.
- Lichtenberg P, Bachner-Melman R, Ebstein R & Crawford H (2004). Hypnotic Susceptibility: Multidimensional Relationships with Cloninger's Tridimensional Personality Questionnaire, COMT Polymorphisms, Absorption, and Attentional Characteristics. *The International Journal of Clinical and Experimental Hypnosis*, Vol. 52, No. 1, pp. 47–72.
- Lloyd D & Rossi E (Eds.), (1992). *Ultradian Rhythms in Life Processes: An Inquiry into Fundamental Principles of Chronobiology and Psychobiology*. NY: Springer-Verlag.
- Lloyd D & Rossi E (Eds.), (2008). *Ultradian Rhythms From Molecules to Mind: A New Vision of Life*. NY: Springer.
- Maslow A (1962/1998). *Toward a Psychology of Being*. NY: Willey
- Rossi E (1996). *The Symptom Path to Enlightenment: The New Dynamics of Hypnotherapeutic Work: An Advanced Manual for Beginners*. Los Osos, CA: Palisades Gateway Press.
- Rossi E (2002). *The Psychobiology of Gene Expression: Neuroscience and Neurogenesis in Hypnosis and the Healing arts*. NY: WW Norton.
- Rossi E (2004). (Iannotti S, translator & ed). *A Discourse with Our Genes: The Psychosocial and Cultural Genomics of Therapeutic Hypnosis and Psychotherapy. Discorso Tra Geni* [Italian] Benevento, Italy: Editris SAS Press. [Available in Italian and English editions] I NY: Zeig, Tucker, Theisen.
- Rossi E (2007). *The Breakout Heuristic: The New Neuroscience of Mirror Neurons, Consciousness and Creativity in Human Relationships*. Phoenix, AZ: Milton H. Erickson Foundation Press.

- Rossi, E (2012). *Creating Consciousness: How Therapists Can Facilitate Wonder, Wisdom, Truth and Beauty: Vol. 2. Selected Papers of Ernest Lawrence Rossi. The Milton H. Erickson Foundation Press, Phoenix: Arizona. office@erickson-foundation.org. e-BOOK.*
- Rossi E, Erickson-Klein R & Rossi K (2008/2014). *The Collected Works of Milton H. Erickson, M.D. Vol. 1 thru 16.* Phoenix, AZ: Milton H. Erickson Foundation Press.
- Rossi E, Erickson-Klein R & Rossi K (2008/2014). *Mind Body Therapy, Vol. 15, The Collected Works of Milton H. Erickson, M.D. Vol. 1 thru 16.* Phoenix, AZ: Milton H. Erickson Foundation Press.
- Rossi, K, Mortimer, J & Rossi, E (2015, in press). Integration of Classical Yoga and the 4-Stage Creative Process of Modern Science: Psychosocial Genomics of Psychotherapy and Optimal Health. *The International Journal of Psychosocial Genomics: Consciousness and Health Research.* Vol. 1, (2).
- Rossi E & Nimmons D (1991). *The Twenty-Minute Break: The Ultradian Healing Response.* Los Angeles: Jeremy Tarcher. Distributed by Zeig, Tucker & Theisen.
- Rossi E & Rossi K (2011). Decoding the Chalmers Hard Problem of Consciousness: Qualia of the Molecular Biology of Creativity and Thought. *Journal of Cosmology, Vol 14.* On Line @ <http://journalofcosmology.com/Consciousness126.html>. Re-Printed in: Penrose R, Hameroff S & Kak S (Eds.) (2011). *Consciousness and the Universe: Quantum Physics, Evolution, Brain, and Mind*, pp. 210-227.
- Rossi, E & Rossi, K (2013). *Creating New Consciousness in Everyday Life: The Psycho-Social Genomics of Self Creation. A Video e-Book available at [www. Amazon.com](http://www.amazon.com).*
- Rossi E & Rossi K (2014a). An Evolutionary RNA/DNA Psychogenomic Theory of Adaptive Consciousness: The Quest for Therapeutic Mind/Gene Search Algorithms. *The International Journal for the Transformation of Consciousness.* Vol. I, 1-20.
- Rossi E & Rossi K (2014b). Quantum Perspectives of Consciousness, Cognition and Creativity: The Dirac Equation in a New Contour Integral Model of Brain Plasticity. *The Journal of Applied and Computational Mathematics* 3(6) <http://dx.doi.org/10.4172/2168-9679.1000183>.
- Rossi E & Rossi K (2015, in Press). The Quantum RNA/DNA Theory of Cosmos and Consciousness. *The International Journal for the Transformation of Consciousness.*
- Shelke SA & Piccirilli J (2014). Origins of life: RNA made in its own mirror image. *Nature*, doi:10.1038/nature13935
- Underwood E (2013). Sleep: The Brain's housekeeper? *Science* (342) p. 301
- Weitzenhoffer & Hilgard (1959). *Stanford Hypnotic Susceptibility Scales, Forms A & B.* Palo Alto, CA: Consulting Psychologists Press.
- Xie L, Kang H, Xu Q, Chen MJ, Liao Y, *et al.* (2013) Sleep drives metabolite clearance from the adult brain. *Science* (342) 373-377.