

Chapter Four*

FACILITATING DARWIN'S DAILY & HOURLY
DHARMA WITH BUDDHA CONSCIOUSNESS:
*Mapping the 4-Stage Creative Process onto Spontaneous Eye-
Roll Dynamics in Therapeutic Hypnosis, Meditation & Yoga*

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ABSTRACT

Spontaneous eye-roll dynamics, which accompany experiences of hypnosis, meditation, and yoga are occasionally reported but little investigated in the scientific literature. We present a single case study of spontaneous eye-roll behavior in a long-term meditator who wanted to experience what hypnosis could add to her lifelong pursuit of creative states of healing and well being. We explore how to map the 4-stage creative process onto the spontaneous eye-roll and the wave nature of consciousness associated with changes in eye lid behavior during hypnosis. We illustrate the theory, practice, and limitations of the cognitive-behavioral approach of using implicit processing heuristics (IMPs) during the basic-rest activity cycle in six sessions of hypnosis. We rec-

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commend further interdisciplinary research on gene expression and brain plasticity for identifying molecular-genomic signatures of creative states of consciousness during the deep psychobiological dynamics of hypnosis, psychotherapy, and meditation.

The rich cultural history of eye-roll behavior and associated eye lid activity during creative states of consciousness has been well documented in the anecdotal literature of yoga, meditation, and spiritual practices (Avalon, 1924) as well as the scientific literature of clinical and experimental hypnosis (Spiegel, 1972/2010; Spiegel, 1974; Spiegel & Spiegel, 1978; Frischholz, 2010; Weitzenhoffer, 1971). Figures 1, 2, and 3a & 3b illustrate this cultural history of eye-roll behavior culminating in our current effort to integrate it with the 4-stage creative process and the deep chronobiology of clinical and experimental hypnosis in figure 4 (Rossi, 1986/19923; 2002, 2004, 2007).

MAPPING THE 4-STAGE CREATIVE PROCESS ONTO THE CHRONOBIOLOGY AND PSYCHOSOCIAL GENOMICS OF HYPNOSIS

The scientific history of clinical and experimental hypnosis is replete with cognitive-behavioral lists of 3 to 12 stages of its progression as pathological or quasi-therapeutic processes of consciousness that were assumed to have a biological basis (Edmonston, 1986; Tart, 1969; Tinterow, 1970). While succeeding generations of researchers have attempted to update this biological foundation, it remains controversial and poorly understood even today. Research consistent with the significance of quasi-periodic parameters in hypnosis has been reported by a number of investigators in the past two decades. Aldrich and Bernstein (1987) initially found that “time of day” was a statistically significant factor in hypnotic susceptibility. They reported a bimodal distribution of scores on the Harvard Group Scale of Hypnotic Susceptibility by college students, who showed a sharp, major peak at 12 noon, which a psychosocial genomic perspective now implies may be a optimal time for performance enhancing (eg. sports) hypnosis. Aldrich & Bernstein also found a secondary, broader plateau of hypnotizability around 5 to 6 p.m. that has been called the “breaking point” (Tsuji & Kobayashi, 1988), which a psychosocial genomic perspective now implies may be a optimal time for facilitating healing genes associated with rest and relaxation as we approach sleep and dreaming (Rossi, Erickson-Klein, & Rossi, 2008).

Further research found a very prominent circadian rhythm with a peak between noon and 1 p.m. in self-hypnosis as well as an ultradian periodicity of about 90 to 180 minutes throughout the day that approximates Kleitman’s 90–120 minute Basic-Rest Activity Cycle (Rossi, 1992a & b; Rossi & Lippincott, 1992). Erickson’s pioneering development of extended 90-120 minute ses-

EYE-ROLL TEST FOR HYPNOTIZABILITY

| UP-GAZE | | | ROLL | |
|---------|--|---|------|--|
| | | 0 | | |
| | | 1 | | |
| | | 2 | | |
| | | 3 | | |
| | | 4 | | |

EYE-ROLL TEST (SQUINT)

| | | |
|---|--|--|
| 1 | | |
| 2 | | |
| 3 | | |

Figure 1. Spiegel Eye-roll test for hypnotizability (Spiegel, 1972/2010).

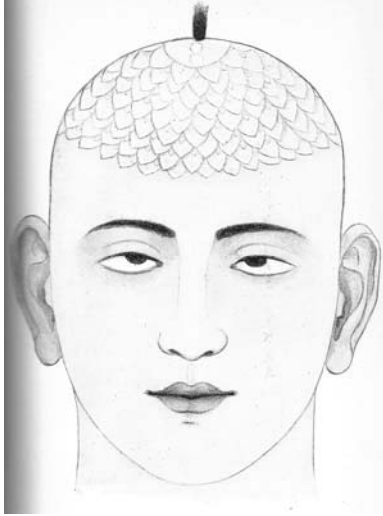


Figure 2. A classical illustration of yoga meditation in the 7th chakra, Sahasrara, which purportedly integrates all experience in pure consciousness. This drawing appears to illustrate a Spiegel eye-roll of about grade three with a mild squint of grade one (Avalon, 1924, p. 93).

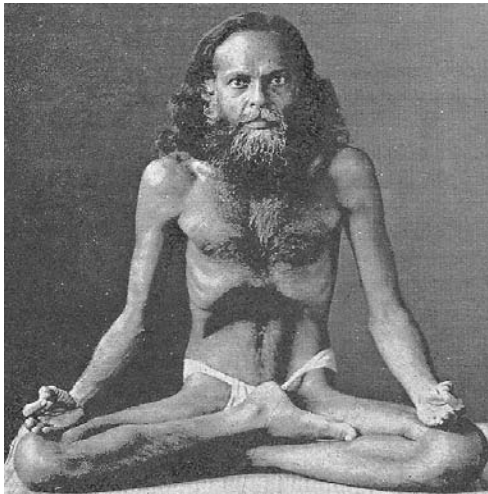


Figure 3a. Initial Stage 1 Yoga posture Uddiyana Bandha in Siddhasana (Breath and Abdominal lock in Lotus Posture) with no evident Spiegel eye-roll. (Avalon, 1924, p. 112).

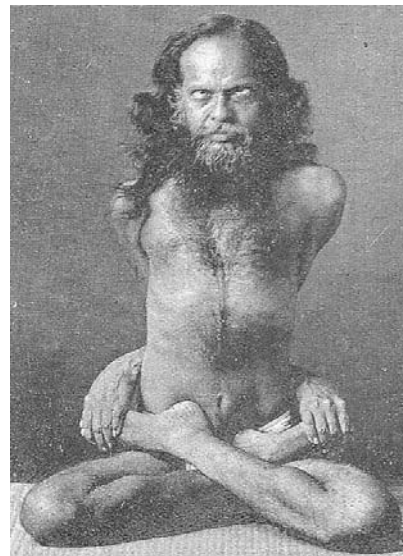


Figure 3b. Yoga posture Baddha-Padmasana (Bound Lotus posture), which purports to have the same benefits as the Lotus Posture facilitating Concentration (Dharana), Meditation (Dhyana), and Self-realization (Samadhi). This illustration appears to have a Spiegel grade 3 eye-roll with about grade 2 squint. (Avalon, 1924, p. 160).

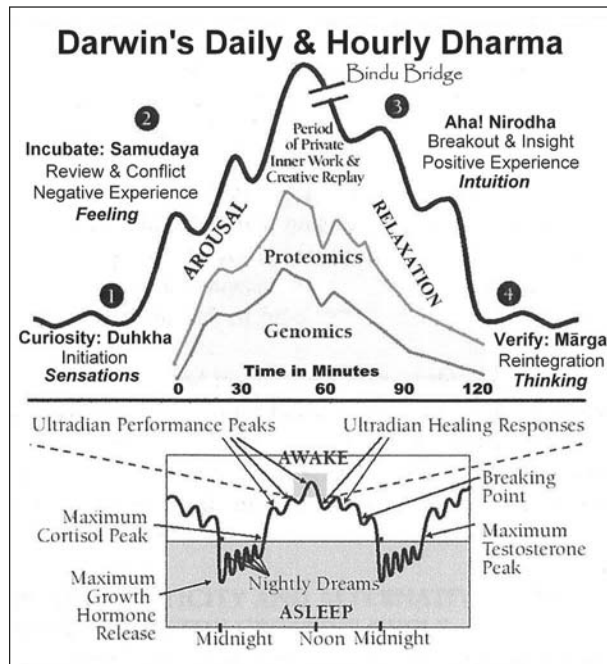


Figure 4. This two dimensional profile of the 4-stage creative process maps the cognitive-behavioral levels of experiencing consciousness onto the chronobiological genomic and proteomic levels during circadian and ultradian BRACs. **Bottom Figure:** The circadian cycle (~24 hours) is made up of wave-like ultradian rhythms representing Kleitman's 90-120 minute Basic Rest-Activity Cycles (BRACs). The qualia consciousness varies during the ultradian behavioral performance peaks and

troughs of the normal circadian cycle of waking and sleeping. The daily peaks of some major hormones are indicated along with the "Breaking Point," which designates a major circadian shift between activity or experience-dependent gene expression during waking and sleeping (Rossi, 2002, 2004, 2007; Tsuji & Kobayashi, 1988). **Top Figure:** The 4-stage creative process is mapped onto one ultradian 90-120 minute Basic Rest-Activity Cycle (BRAC), which we hypothesize, is utilized in many ancient and modern approaches to hypnosis, meditation, psychotherapy, spiritual practices, and yoga (Rossi et al., 2010). We propose that the "Period of Private Inner Work & Creative Replay" that mediates the successful therapeutic transition between the conflicts of stage 2 and the therapeutic insights of stage 3 and 4 of the creative process are facilitated by implicit processing heuristics (IMPs) operating on many levels from the cognitive-behavioral to the molecular-genomic (Atkinson et al., 2010). A highly speculative, trans-cultural perspective is provided by mapping "Buddha's Four Nobel Truths" onto the 4-stage creative process. Stage 1: Curiosity; Duhkha means uneasy, unsteady, disquieted, which motivates the search for nirvana. Stage 2: Incubate; Samudaya means misery caused by the passions can be transcended. Stage 3: Aha; Nirodha means intense concentration in which the subject/object distinction is transcended for realization of non-duality (Nirvana); resolving the problem of the opposites (or dissociation) of being stuck in one side of a polarity. Stage 4: Verification; Marga is the path leading to nirvana, the state of being free from suffering (Duhkha).

sions of therapeutic hypnosis motivated more recent research into the deep chronobiology of therapeutic hypnosis and its possible psychosocial genomic associations (Lloyd & Rossi, 1992, 2008; Rossi & Lippincott, 1992; Rossi & Nimmons, 1991; Rossi, 1986/1993, 2002, 2004, 2007). Figure 4 summarizes much of this research by mapping the 4-stage creative process onto therapeutic hypnosis on the cognitive-behavioral, proteomic, and genomic levels during the circadian (~24 hours) and the basic-rest activity cycles (BRAC of 90-120 minutes also called “ultradian rhythms”) of chronobiology (Rossi et al., 2010).

It is a little known fact that Darwin wrote in *The Origin of Species* (1859), “evolution is a daily and hourly process,” even though he could not have known the molecular-genomic mechanisms of evolution. Neuroscience research now documents that this time frame (“Darwin’s Daily and Hourly Dharma” or work in figure 4) is required to turn on activity or experience-dependent gene expression and brain plasticity for the induction of new dendritic spines in our neural networks to encode adaptive memory, learning, and consciousness (Rossi, 2002, 2004, 2007; Ziv & Ahissar, 2009). The chronobiological theory of mind-body healing via hypnosis proposes that many stress-related psychosomatic problems may be outcomes of the chronic violation of the wave nature of consciousness during the rest/rejuvenation parameters of the BRAC (Rossi & Lippincott, 1992; Lloyd & Rossi, 1992, 2008) and the default brain (Raichle et al., 2001) on many levels from the cognitive-behavioral to the molecular-genomic (Rossi, 1986/1993, 1991, 1992, 2002, 2004, 2007). We propose that the “Period of Private Inner Work & Creative Replay” illustrated at the top of figure 4 that mediates the successful therapeutic transition between the conflicts of stage 2 and the insights of stage 3 of the creative process can be facilitated by implicit processing heuristics (IMPs or open-ended positive hypnotic suggestions) operating on many levels from the cognitive-behavioral to the molecular-genomic (Atkinson et al., 2010).

In this paper we recorded time lines of how the spontaneous eye-roll behavior of a long term meditator was associated with variable cycles of seconds to minutes and hours that apparently were related to the intensity of her consciousness, cognition, and motivation during hypnosis. While Spiegel (1972/2010; Frischholz & Nichols, 2010) pioneered research on the eye-roll as a physiological sign for hypnotizability (which he believed had genetic basis), he did not report extensively on its natural time parameters. He did, however, propose the eye-roll as part of a therapeutic regime for some patients, which could be practiced throughout the day when he recommended, “Now I propose that you do this exercise every one or two hours. Each time it takes about 20 seconds.” (Spiegel & Spiegel, 1978, page 287). These recommendations are consistent with the time parameters of this case study when the patient was sched-

uled for two 90-120 minute sessions of hypnosis (morning and afternoon) for a total of six sessions over three successive days. This paper outlines the theory and technique of mapping the 4-stage creative process of figure 4 onto therapeutic hypnosis with a well functioning 56 year old professional woman who had practiced meditation for an hour or more daily for 37 years. She is now a highly regarded teacher transcendental meditation who has developed her own natural style. She summarizes her lifelong quest in this brief autobiography of her creative consciousness that led to explore hypnosis.

AN AUTOBIOGRAPHY OF MY CREATIVE CONSCIOUSNESS

My earliest sense of my “self” probably arose when I was about three years old, when I started spending weekends with my grandparents. Their love for me was so extraordinary that a deep sense of security and self-worth was created at a very young age. It was my first conscious “relationship.” That sense of security lasted throughout my school years.

At the end of my first semester of college, I was assigned a paper for my “Future of Religion” class, which was to be called “What is God?” I was 18 years old, and realized that despite having been very involved in my church, I had absolutely no idea what or who God was. Out of curiosity more than anything, I became committed to figuring out God. I read many Christian books, and had to admit that I didn’t understand any of it. I didn’t know what transcendence meant; I had no idea what the “Holy Ghost” was; I didn’t understand what it meant that Jesus “died for our sins.”

Then in the middle of a cold night in December, I awoke and literally saw and heard one word: Being. It came to me that God is pure Being, or pure existence. I looked out the window, and felt like I saw an infinite, invisible field of Being from which everything arises. As I looked out, I sensed that this field of Being connects everything—the sidewalk to the building to the sky to the cloud to the street light, and back to the sidewalk. All the Christian principles suddenly made sense. God, as Being, is obviously everywhere at the same time. And as the source of all creation, Being is like a “Father.” It is transcendental, because that field of Being has no quality whatsoever, or it would be “something,” whereas it is pure and is “no-thing.” Everything seemed to fall into place in a new way.

I went back to the Christian books and looked in the indices for the word “Being,” and was shocked to find nothing. I wrote my paper based solely on my cognition, and got an A+, with the professor saying that it was the best paper he had ever read. However, I was left feeling completely alone, as if the main world religion didn’t really know what God was. I felt isolated, like I had a big secret that no one would understand.

At the end of the second semester, I came upon a book called “The Science of Being and Art of Living.” A whole book on Being, where I couldn’t even find one word in the Christian books. I thought, “Whoever wrote this book knows what I know.” The author was the founder of Transcendental Meditation, Maharishi Mahesh Yogi, and I thought, “So THAT’S what this is.” I had dated a guy in high school, and another that year in college, who practiced TM and both had urged me to learn, but I had refused. I was now anxious to learn to meditate, and did so within days of seeing that book. The first moments of meditation were extraordinarily soothing and comforting, my first true “inner” experience, and it was so beautiful. After that first meditation, I committed myself to pursuing the experience and teaching of consciousness.

After 37 years of meditating, for hours at a time during some periods, I have become intimately familiar with the rich inner world of consciousness. When I close my eyes, I let go. Almost immediately, I generally feel my whole body and mind soften and dissolve into gentle silence. A physical warmth feels as if it is dissolving tension in my body. Within a short time, silence is no longer merely in the mind, but usually permeates the body as well. I feel rooted in a deep, thick, physical state of well-being. I allow my inner energy to move through me on its own. Before long, my body is usually glowing with tremendous joy and light.

My mind expands almost all at once, and the usual “frame” of my mind dissolves. I become as if an entirely open mind without any body, Being itself with no definition. Sometimes there is no mental activity whatsoever, no thoughts or fluctuations. All mental activity comes to a complete stop. I experience infinity not as infinite time, but as absolute stillness. Other times, my entirely open mind, all on its own, likes to romp and play, and moves out to explore the universe. This experience comes after a very nice upward flow of extremely fine, almost non-material energy. The flow is strong, and the top of my head feels as if it opens effortlessly, as if that is how it belongs. That expansive consciousness outside my head then becomes “me” and sees and feels everything from that time on. My consciousness expands beyond all universes, and as it flows out, it subtly touches everything in its path—galaxies, stars, planets, and black holes. It even feels as if empty space can be sensed by consciousness. It also sees everything, from colors to shapes to brilliant light. My consciousness becomes like one subtle sense. Sometimes the upward-flowing energy explodes into colors, like the Fourth of July, which then turns into an intense radiance of pure light. My body often feels like it is a generator, generating brilliant light. Joy pulsates out with powerful force.

When the energy begins to move up, my body generally follows that upward flow. My posture becomes very straight. My head is often pulled back

such that my neck is curved backward. And although I may not be aware of it, my eyes roll up with the rise of consciousness as it flows or rushes out the top of my head. The strong upward flow of energy pulls my body with it.

In any event, my consciousness during meditation is malleable. I might feel like it is wrapped around a planet, or wrapped around an organ, soothing my body. It can become love, or it can become powerful strength. And after these experiences, whether a Buddha-like deep silence, or expansion of consciousness out into the universe, my body feels cleansed and is in a solid state of peace.

I found a special resonance with hypnosis and my experience of freedom, power and expansion was greatly magnified during my sessions. Hypnosis hit a deep chord, and are helping me to translate these inner experiences into my demanding daily activity, where I hope the full power of Being will migrate to next. By being open and receptive throughout the day, hopefully that positive flow of energy will completely blend my inner life with my outer life.”

PSYCHOLOGICAL ASSESSMENT

Results of psychological assessment with the Tellegen Absorption Scale, the Creative Psychosocial Genomics Healing Experience (CPGHE), and the Spiritual Intelligence Self-Report Inventory (SISRI-24) were consistent with the high functioning hypnotizability group reported previously (Atkinson et al., 2010; Rossi et al. 2008). A protocol for the administration, rationale, and research on the CPGHE is feelyavailableat<http://www.ernestrossi.com/ernestrossi/Neuroscienceresearchgroup.html>). Research indicates that that the ideo-plastic process of therapeutic hypnosis may be associated with (1) the heightening of a molecular-genomic signature for the up-regulation (heightened activity) of activity-dependent genes characteristic of stem cell growth, (2) a reduction in cellular oxidative stress, and (3) a reduction in chronic inflammation associated with psychosocial stress. Our subject was unaware of her spontaneous eye-roll behavior when practicing meditation and during hypnosis, however, until she was informed about it the fifth session when we photographed it as illustrated below.

MAPPING THE 4-STAGE CREATIVE PROCESS ONTO THE SPONTANEOUS EYE-ROLL IN HYPNOSIS

Session 1.

Curiosity and the Initial Facilitation of Therapeutic Hypnosis

The first stage of the creative process was initially labeled by Leonardo da Vinci as “curiosity” (Gelb, 1998). This is the usual stage many people ex-

perience during their initial encounter with hypnosis and psychotherapy. A time-line of this initial experience with a mapping of the therapeutic 4-stage creative process onto spontaneous eye-roll behavior is presented here.

Stage 1 of the Creative Process:

A time-Line of Implicit Processing Heuristics (IMPs)

10:15 am. During the first hour she responded to the therapist's gentle prompting by telling the story of the autobiography of her consciousness (which she later recorded in her own words for publication, at the therapist's request).

11:18 am. In response to her initial curiosity and request for an experience of therapeutic hypnosis for whatever value it could contribute to her 37 years of practicing meditation, the Creative Psychosocial Genomic Healing Experience (CPGHE) was administered to her. She responded to the CPGHE by spontaneously closing her eyes and after a few minutes she reports in a soft voice, "I feel a presence within me as a glow. . . the glow is a divine joy on the one hand that is in sharp contrast with the secular world of not understanding on the other hand. It is a wonderful release [spoken quietly with very slow head nodding, which is characteristic of a positive "yes set" during therapeutic hypnosis (Erickson & Rossi, 1976/2010)].

The therapist now prompts her with "*Is it a relief to know that the essential you is bridging the secular and the divine?*" This is an *implicit processing heuristic* (an IMP—a positive and permissive open-ended therapeutic question or suggestion that uses her own language and frames of reference to deepen and further facilitate her ongoing original inner psychological experience, whatever it may be and become (Rossi, 2002, 2004, 2007; Rossi & Rossi, 2007). An implicit processing heuristic is open-ended in the sense that the patient's creative processing fills in the therapeutic expectation implied by the verbal stimulus (the heuristic) offered by the therapist. This is in contrast to the popular conception of a "hypnotic suggestion," which is commonly regarded as the therapist's effort to plant a mental seed or program the patient with the therapist's view of what would be therapeutic for the patient. In practice the psychotherapist rarely knows precisely what would be experienced as therapeutic, however, within the patient's vast subjective world of unresolved issues, stress, trauma, and hidden resources that they usually are unaware of. The therapist's implicit processing heuristic offers patients an opportunity to engage in original creative activity, however, to solve their own problem in their own way. The individual patient becomes the locus of creativity and control of her own consciousness, behavior, and problem solving—not the therapist. This deep psychobiological essence of the patient's creativity activity is called "activity or experience-dependent gene expression and brain plasticity" in recent neurosci-

ence on memory and learning as well as psychosocial genomic research (Rossi, 2002, 2004, 2007). We propose that such activity-dependent gene expression and brain plasticity is the molecular-genomic foundation for generating new neural networks that create new consciousness, behavior, and problem solving skills that are the core of the help, cure, satisfaction, and/or wisdom the patient seeks through meditation (Dusek et al., 2008), psychotherapy and therapeutic hypnosis (Rossi et al., 2008; Atkinson et al., 2010), Quigong (Li et al., 2005) and other so-called “spiritual” practices.

Stage 2 of the Creative Process:

Spontaneous Eye-roll during Creative Incubation

11:29 am. [In response to the above implicit processing heuristic her head spontaneously, very slowly, and gently tilts upward with a slow smile. After a few minimal flutters of her already closed eyelids they spontaneously lift as illustrated in figures 5a-d to reveal a spontaneous eye-roll of grade 4 (only the white sclera of her eyes is visible, Spiegel, 1971/2010; Spiegel & Spiegel, 1978).

11:31 am. The therapist offers another implicit processing heuristic that would appeal to her initial attitude of curiosity, *“Simply realizing the essence of your quest or destiny somehow.”* Her eye lids spontaneously close for a few minutes in apparent rest and then she begins another cycle of apparently intense mental activity by tilting her head slowly upward again with her eye lids quivering and opening slightly to reveal another grade 4 eye-roll.

11:38 am. Her spontaneous eye-roll continues with a broadening smile and subtle upward forward thrust of her head as if she is in a state of rapt conscious attention and inner concentration. The therapist offers another implicit processing heuristic that functions as a post-hypnotic suggestion, *“Knowing you can enter this creative therapeutic state any time you wish when it is appropriate to do so to help yourself.”* The chronobiological theory of therapeutic hypnosis proposes that it is entirely natural and appropriate to enter the healing state of the basic rest-activity cycle every 90-120 minutes or so, which has been called “the Common Everyday Trance” or “Ultradian Healing Response” in figure four.

Stage 3 of the Creative Process:

Evident Joy with Creative Inner work.

11:45 am. She oscillates several times for one to three minute cycles between (1) apparent rest with lowered head tilt, closed eye lids, and minimal smile, to (2) quivering eyelids, upward tilting head, broadening smile, and (3) spontaneous opening eyelids to reveal another grade 4 eye-roll. The therapist applies another implicit processing heuristic, *“Sensing yourself on all levels*

with an intuitive clarity so you can recognize everything you need to learn about bridging the secular and spiritual side of your nature.”

**Stage 4 of the Creative Process:
Awakening with an Implicit Processing Heuristic (IMP)
for Continuing Creative Work.**

11:50 am. She now appears to need to take a break as indicated by a few hand and arm movements with some minimal postural adjustment so the therapist offers an opportunity to end this first session with another implicit processing heuristic, *“When some inner part of you knows it can continue this therapeutic self guidance—and when your conscious mind knows it’s an appropriate time of day to take a break—when your conscious and unconscious mind know they can learn to cooperate in this ideal way—what will it be like then to come back to your normal everyday awareness? Knowing all you have experienced can remain private within yourself—although you may wish to share something appropriate for you to share so I will know how to help you further. Will you now stretch first or will your eyes open first as you become normally awake?”*

After a minute or two she makes postural adjustments, stretches, opens her eyes and summarizes her experience. “So Beautiful! I feel my shoulders release. . . a finer level of spirituality. . . my heart opened. . . first time a barrier was removed in this session. . . there was a release. . .I experienced a bridge between the secular and divine. . .I can bridge them. . . its all one me!” When asked to estimate how long her experience lasted she seemed at a loss and remarks, “Oh, it could have been three hours?” This is in striking contrast to the usual sense of time condensation when people have a positive, intense creative experience associated with hypnosis (Naish, 2007).

Session 2:

Recognition of Hidden Pain and Stresses are Balanced.

2:27 pm. Stage 1 of the 4-Stage Creative Process: Curiosity. “I sometimes have headaches, digestion problems . . . like a fire burning for hours during the past two years. . . during the unbearable pain of migraine the contrasting thought of peace on the other side would seem soothing . . . My next step in life presently does not seem to be moving toward marriage, although I am utterly open to whatever would bring the richest life experience without sacrificing the growth of the divine within.”

2:30 pm. Stage 2: Creative Incubation, Life Review, Feeling Stuck. A Protocol for Hand Mirroring the Opposites of Frustration and Ease. She describes how she vacillates between feelings of frustration and ease in everyday life. The therapist immediately recognizes that these polar opposites require ex-

ploration and resolution during a stage 2 creative incubation. He administers the *Creative Psychosocial Genomics Healing Experience* by asking her to experience her frustration on one hand and its opposite—ease on the other. She experiences a series of symbolic mirroring hand movements that lead her to the following life review and insights. “I quickly realized I was stuck in marriage. I also get stuck in large group activities—I just want to let me be with me! My mother had a baby—then I had to care for it! I wanted freedom. I did not want to be stuck in the Brownies. I never had enough time—I always had to rush. Now I’m in conflict when I have to do a lot in a limited time. I’m frustrated trying to fit it all in. There are “A thousand names for Joy” (Katie, 2007). The rest of my life? Learning!”

3:24 pm. Stage 3: Spontaneous Aha! Insight. “I still have too many wants! I have no discretionary time!”

3:28 pm. Therapist prompts with another IMP, *Continue exploring that for a while*. Spontaneous eye closure and eye-roll with eye lids raised about 25% only.

3:31 pm. Bigger eye-roll with lids raised 100% with upward tilting head.

3:32 pm. She suddenly has worried look with wrinkled forehead. The therapist supports her with an IMP, “*Having the courage to briefly acknowledge the truth of that to learn how to cope effectively with it.*” She later responds, “I think that when my face contracts, or looks worried, or the eyebrows come together, is when the consciousness begins to become concentrated in my head before the top of my head opens and the consciousness either flows or bursts out. It becomes intensified.”

3:40 pm. Continuing grade 4 eye-roll with a big smile with head tilted upward toward ceiling in apparent intense rapt inner attention and expectancy.

3:45 pm. The therapist applies another IMP, “*What a wonderful gift—to have the time to be what one naturally is—the time to be your best self!*” She responds with an even bigger smile, upward head tilt, and grade 4 eye-roll.

3:55 pm. The therapist emphasizes another IMP to reinforce her evidently ecstatic stage 3 experience, “*What a gift to fully appreciate the very best of your natural state of being!*” The therapist then humorously proffers another IMP, “*And all completely free of charge!*” [She responds with a big smiling, in apparent acknowledgement of the humor and makes some minimal body movement characteristic of awakening from trance.] The therapist responds with his characteristic cue for awakening with a positive IMP for her self-directed future therapeutic practice, “*When your inner mind knows it is time to take an appropriate healing break during your daily activities, and when your conscious mind knows it can recognize that that healing time—when your unconscious and conscious minds know they can cooperate in just that*

way—*what will it be like to come back fully awake to this room—will your eyes open first or will your body shift and move as you become fully awake knowing you can keep most of that private—sharing just a few sentences with me that are appropriate to be shared so I can help you further.*”

4:05 pm. Stage 4 of the Creative Process, Reviewing the Shift from Stage 2 to 3. She spontaneously awakens, opens her eyes with a big yawn, and slowly remarks, “A lot of my dark frustration became light and I became free like the ocean. . . This is acceptance; the ocean accepts the storm. . . Like the eye of the storm I can be in a point of balance.”

Session 3: 10:10 am. Stage 1, Trance Induction with a Novel and Surprising IMP. She begins by remarking, “My heart opens here. I did not know how much tension I was carrying in my body. Ah. . . this is a delight for my whole body.”

10:18 am. Therapist responds with what turns out to be a novel and surprising trance inducing Implicit Processing Heuristic (IMP) in the form of a pair of questions that carefully match her frame of reference (meditation) by meeting her personal needs for free self-realization as expressed during the previous session, “*Yes, is it ok for you to just be you at this time? Could this personal mantra transcend even the bodhisattva ideal to not take the ultimate step into enlightenment until all other sentient beings can go with you?*”

10:24 am. She seems momentarily mildly startled by this IMP. She makes immediate focused eye contact with the therapist with an attitude of inquiry, her eye lids flutter in an apparently involuntarily manner, and then close as a big soft smile slowly envelopes her face.

10:31 - 10:39 am. A grade 4 eye-roll gradually develops with her eye lids opening only about 25%.

10:42 - 10:50 am. Stage 2, Effortful Creative Incubation and Exploration with No Apparent Conflict. She slowly takes a deeper breath with a slight smile and her head thrusting forward as if in active, focused determination and positive expectation. She spontaneously and very slowly alternates her head in a cyclic manner from an upward to a downward direction.

10:53 - 11:54 am. Stage 3, Smiling Happiness and Apparent Ecstatic Well Being. During this hour of complete silence the only movements were very slow smiles and eye lid movements from closure to gradual opening about 10 to 25 % with a constant grade 4 eye-roll (only the white sclera of her eyes visible). Finally her smile broadens with slight finger and wrist movements as if she is spontaneously awakening. The therapist acknowledges her awakening with an IMP that supports her evident stage 3 ecstatic joyful smile, “*That’s right! And getting ready to come back to this room when it is appropriate.*”

10:56 am. Stage 4, Review with Insight into Former Body Stress and Tension. She stretches with a big stage 4 eye-roll and opens her eyes, “Ah. . . That was wonderful. . . A constant relief. . . I did not know how much tension I carried in my body!” The therapist supports her positive conscious state by asking her to write a few words describing her experience. She writes, “Freedom, clean slate, wholeness, light radiating, richness.” She continues to verbally describe how she feels. “My head was a sunflower. . . Joy, nirvana, sparkling light, on an infinite plane . . . Free happiness ocean. . . I feel at home bathing in that light. . . the resonance is me mind, body, soul. . . Nothing to do. . . No next. . . I need no next once in a while. . . I need relief . . . I need breath . . . That’s where the tension came from . . . Well-being is nothing over me . . . directing me . . . A cork was in my heart . . . That is relief . . . Freedom from the frustration of the next . . . That is what enlightenment is! . . . That was a big insight for me . . . which I never experienced before . . . This was like my first experience of Being when I was 18 years old. . . Very revealing. . . I enjoy being I am what I am without trying to get there. . . To have no next is to be free. . . It happens by itself. . . It is not made by the ego. . . I don’t have to be!” With careful non-direction the therapist inquires with a sentence stem that allows her to fill in the blank about her experience without putting a verbal label on it, “*On a scale of 1 to 10 with 10 being the most _____?*” She answers, “Very close to 10! Even my curiosity was at peace. . . The growth kept happening. . . It goes on its own. . . There definitely was tension in me that I did not know I was carrying. . . Even a subtle level of Being was a tension. . . A subtle inner me was tension. . . But my two selves completely dissolved today.” We both laugh about her former tension that she did not know was carrying.

At this point the therapist privately wonders about her fascination with her intuition about the apparently autonomous or mildly dissociated nature of “The growth kept happening. . . It goes on its own.” Was this a positively self-motivated and learned state of consciousness that has been described as the “novelty-numinosum-neurogenesis effect” (Rossi, 2002, 2004, 2007)? Has evolution selected this as a positively motivating state for its adaptive value in promoting new consciousness via “activity-dependent gene expression and brain plasticity? Is this, in fact a state of “creative consciousness” or so-called “higher consciousness” that has been practiced and prized throughout human history as the pursuit “spiritual consciousness,” ecstasy, etc. (Avalon, 1924; Bucke, 1902/1956; Underhill, 1963). It has been purposed that the pursuit of so-called “spiritual freedom” and “enlightenment” is an evolutionary adaptation selecting for “new consciousness” analogous to sexual selection (Rossi et al., 2010).

**Session 4:
Activity-dependent Hand Mirroring of the Opposites
for Creating New Consciousness.**

2:10 pm. Stage 1, Curiosity About Her Life Journey. This session began with her review of the positive meaning, motivation, and pursuit of meditative and special states of consciousness. She congratulated the therapist for giving her “the freedom from the burden of having to do another next thing and allowing me to transcend so that my experience was more pure.”

2:35 pm. Stage 2, Creative Incubation and Self Review. She acknowledged that after 37 years she no longer practiced any special meditative technique but, rather, allowed herself “to flow with whatever I experience as the best for the moment in being me for me!” She then described how her “consciousness flows up and my eyes then follow the upward flow of consciousness up to the top of my head and out.” The therapist’s careful non-directive inquiry revealed, however, that she still had no awareness of her spontaneous grade 4 eye-roll behaviors. As she described her experiences the therapist noticed her eye lids beginning to flutter and close with another spontaneous eye-roll becoming manifest. He supported with an implicit processing heuristic (IMP) by casually remarking, *“That’s right, talking and doing on one hand and just being on the other.”*

2:37 - 3:49 pm. Stage 3, IMPs Facilitating Peak Positive Experiencing with Continuous Eye-roll. This initiated about an hour and a quarter period (i.e. a typical 90-120 minute basic rest-activity cycle) of alternating eye lid opening and closing with an apparently permanent grade 4 eye-roll through out. The therapist facilitated her peak positive experiencing of rapidly shifting radiant smiles, eye lid opening and closing, upward head tilts, and inner focus with a series of IMPs to bridge the opposites and polarities of her experience, *“That’s right, allowing the flow to happen all by itself. . . appreciating and welcoming the wonderful gift of receiving on the one hand and expressing on the other. . . really enjoying this moment. . . bridging the secular business of life on one hand and spiritual being on the other. . . doing on the one hand and not doing on the other. . .”*

Using an atomic wall clock (RadioShack Cat. # 63-1438) the therapist noticed a very rapid time series of partial eye lid opening (ranging between ~10 to ~100%) and closing accompanied by broad smiles and apparent excitement. There was a constant grade 4 eye-roll evident throughout these rapidly eye lid flutters, however. These rapid spontaneous eye lid flutters occurred within a time domain of a few minutes to approximately half second, which was the limit of therapist’s ability to observe and record them in real time as follows.

3:29 pm. Eye lids suddenly open wide (about 75%), which the therapist immediately reinforces with an IMP, “*That’s right! Allowing that to flow as it will!*”

3:29:30 pm. Ends eye lid opening.

3:33 pm. ~ 25% eye lid opening, which is immediately reinforced with an IMP, “*Yes! That wonderful gift of receiving!*”

3:34:20 pm. A big smile, which is immediately, reinforced with a therapist IMP, “*Yes, a whole lifetime of enjoying going with the flow!*”

3:37:15 pm. ~50% eye lid opening with grade 4 eye-roll evident.

3:39:04 - 3:39:28 pm. ~25 % eye lid opening with grade 4 eye-roll evident, reinforced with, “*Simple appreciation of what can happen all by itself.*”

3:49:07 - 3:51:24 pm. ~50 % eye lid opening with grade 4 eye-roll evident, reinforced with, “*Yes, a gift of what?*”

3:51:45 - 3:53:09 p.m. Eye lid closure followed by a spontaneous ~50 % eye lid opening with grade 4 eye-roll evident.

3:53:26 p.m. She finally yawns spontaneously signaling the end of her inner work and casually remarking, “I learned so much about the struggle between doing and not doing in my life ! . . . Between expression and experiencing. . . I allow the inner darkness along with the light. . . my heart opens in a joyful way when I can do both. . . I go with the flow like water. . . I resonate with your words, “*To go with the flow. . . .* Brightening, brightening. . .” The therapist noted her spontaneous shifts between intensity and relaxation that was consistent with mathematical models of the wave nature of consciousness on many complex, fractal, networks from the cognitive-behavioral to the molecular-genomic levels (Mitchell, 2009; Rossi, 1986, 1986/1993, 1991, 1992; Rossi & Lippincott, 1992; Rossi & Rossi, 1992, 2008; Rossi et al. 2010; Strogatz, 2003)

Session 5: 9:30 am. How to Bridge the Secular/Spiritual Existential Polarity. This session began with the therapist suggesting she practice her usual meditation routine for comparison with her hypnotic experiences. Her spontaneous eye-roll behavior began as she self guided herself into her usual practice. After a brief period of meditation the therapist’s explores her behavior with a series of non-directive questions about whether she has awareness of her eye-roll. She responds with surprise and maintains was unaware of her spontaneous eye-roll behavior when practicing meditation and during hypnosis until she was informed about it in this session. She gave permission to be photographed, as presented in figures 5a-d, during another hypnotic induction via the CPGHE as she re-experienced her ocean metaphor of life and the bridging of the spiritual—secular split within herself.

**Session 6:
A Report of Buddha Consciousness.**

2:23 pm. Stage 1, A Challenging IMP Inducing Eye-roll Dynamics. Since this is to be our final session the therapist challenges her sense of well-being by playing the devil's advocate with a humorous but provocative IMP, "*What temptation could lead you away from your best self in the future?*" Obviously surprised with this unexpected and mildly confrontive question, she immediately responds with her typical pre-eye-roll sequence of expectant, inward focusing, which is manifest as silence, smiles, eye fluttering and closure, upward head tilt, and gradually opening eye lids that reveal a grade 4 eye-roll.

2:41 pm. The therapist prompts further with a mildly dissociative IMP, which supports her expectations, whatever they may be. "*Simply receiving what wants to come all by itself.*"

2:46 pm. Gradually a grade 4 eye-roll with eye lids only about 1/8 open becomes evident.

2:58 pm. Stage 2, IMPs Supporting Activity-Dependent Inner Work and Behavior Change. Therapist proffers another IMP to support her Stage 2 inner focus and expectancy further with, "*Really. . . Receiving that. . . fully!*" The timing of IMPs is usually hitch-hiked onto her own manifest behavior of changing inner activity (e.g. smiling, eye lid flutters, upward head tilts, etc.).

It is especially important for the therapist to provide positive, supporting IMPs during difficult experiences of stage 2 that are frequently manifest as tearful sorrow, stress, tension, and worry lines about the eyes, forehead, and mouth, etc. Notice how an IMP such as, "*Having the courage. . . to experience just enough of that. . . so you can learn how to do something constructive with it*" tends to empower people and direct them toward the inner creative re-playing that eventually generates problem solving and the "aha!" experiences of insight and healing in stage three of the creative process.

3:11 - 3:44 pm. Stage 3, Supporting, Recognizing, and Appreciating Positive Experiencing. A cycle of spontaneous, effortful, fluttering eye lids and constant grade 4 eye-roll alternated with momentary rests of quieting activity for a minute or two as illustrated previously in figure 5a-d. Supporting IMPs during this ever changing cycle were offered quietly every few minutes, "*That's right, receiving that as clearly as you need to. . . Yes, going with the best of that private experience. . . Noticing how all that comes together as your best experiencing and understanding at this time. . . learning to experience enough of that to help you develop in any way you wish. . . recognizing and fully appreciating those magical moments when you can help yourself and others in the best possible way. . .*" She frequently responded to these supporting IMPs with a broadening smile, higher eye lid lift and flutter, up-

ward head tilt, and seeming intensification of her grade 4 eye-roll.

3:44 pm. Stage 4, A Report of Buddha Consciousness - Nirvana Kind of Thing. She makes minimal stretching movements implying her natural hour of inner experience was coming to a spontaneous ending, which the therapist supported with a variation of his usual post-hypnotic IMP, *“When your inner mind and consciousness know they can continue to cooperate in just that way at appropriate times throughout your life. . . what will it be like to come back to being normally awake, maintain your privacy, and sharing only what is necessary for me to help you further?”* She awakens with smiling stretches, postural adjustments, clear direct eye contact, and a confident matter-of-fact manner with a quiet series of statements. “This was the ultimate experience of my life. . . I did not have to work at it. . . I simply received. . . My whole being opened up, I became a vessel. . . stronger and stronger. . . I was at the source of creation. . . I’ve waited for this since I was 18 years old. . . It penetrated my mind. . . The total openness to let everything come. . . There is no secret! . . . You just open and it is revealed to you. . . Just be receptiveness and relief. . . Every moment a relief, not stress. . . I felt I was Buddha, pure solid consciousness. . . You know when you are receiving a gift. . . Stillness of the source. . . Nirvana kind of thing. . . A glow comes. . . Nice to be glowing. . . No confusion. . . Cosmic scale receiving. . . It comes in waves. . . A marriage with divine consciousness.”

Two Month Follow-Up. In response to permission to publish this account she reports, “I still am required to rush sometimes, but since our sessions, the flow is much smoother. I am much more in control without having to exert control. It is an extraordinary phenomenon. My whole being is more like solidified wholeness, and at the same time there is a magical, sparkling quality to my inner experience. . . There is a whole new quality of consciousness since our sessions, a much deeper and more permanent. . . And there is so much more joy during my work day, and more patience during stage 2. Having the understanding of what it means to get ‘stuck,’ makes it much easier to flow through that stage.”

DISCUSSION

The theory and technique of facilitating the 4-stage creative process during the spontaneous appearance of a grade 4 eye-roll sign in therapeutic hypnosis now requires further interdisciplinary research on many levels from the cognitive-behavioral to the molecular-genomic. We have demonstrated the cognitive-behavioral level of how the 4-stage creative process can be applied (mapped onto) the spontaneous appearance of the grade 4 eye-roll dur-

Figures 5a-d. A time series of 4 successive photographs culminating the spontaneous Spiegel grade 4 eye-roll in a 37 year meditator during therapeutic hypnosis via the Creative Psychosocial Genomics Healing Experience (CPGHE).



Figure 5a: Stage 1
Eyes normal before application of an implicit processing heuristic (IMP).



Figure 5b: Stage 2
Initial lid flutter and minimal opening with eye-roll already evident immediately after application of an IMP

ing hypnosis with a series of positive, open-ended suggestions or implicit processing heuristics (IMPs) as follows.

Stage 1: Allowing psychological experience to flow with curiosity and wonder.

Stage 2: Courage to review, explore, and creatively replay conflicts and stresses.

Stage 3: Recognizing and appreciating “aha!” experiences and new possibilities.

Stage 4: Reframing old problematic experiencing with new adaptive contexts.

This 4-stage creative process rarely proceeds smoothly in this order, however. Most typically there are uncertain shifts back and forth between stages two and three, which the therapist can ameliorate with positive and supportive but open-ended IMPs that allows people to solve their own problem in their own unique way. We have demonstrated how such implicit processing heuristics can facilitate the existential flow of inner experience in a manner that is consistent with mathematical models of the complex, fractal, wave nature of consciousness on many levels from the cognitive-behavioral to the molecular-genomic.



Figure 5c: Stage 3
Eyes now in an upward gaze with lids more open and a grade 4 eye-roll manifest.

Figure 5d: Stage 4
A full grade 4 eye-roll with eye lids wide open.

We speculate that people commonly experience an emotional crisis with foreboding negative symptoms of so-called “psycho-pathology, PTSD, etc.” when the transitions between stages 2 and 3 of the creative process are incomplete and in danger of failing. We further speculate that the so-called ineffable positive “spiritual” experiences, which are commonly reported to accompany many cultural practices purporting to facilitate “higher, cosmic, peak, transcendent, states of consciousness, enlightenment, bliss, or nirvana” etc. actually reflect the nascent quality of the “Period of Private Inner Work & Creative Replay” between stages 2 and 3 of the creative process when it is succeeding (we call this “the novelty-numinosum-neurogenesis effect”). No metaphysical assumptions are needed to account for ineffable quality of positive spiritual experience. Rewarding and evolutionarily adaptive spiritual experiences are the intuitive, highly expectant, positive qualia of activity or experience-dependent gene expression, brain plasticity, and new neural networks, which are the molecular-genomic underpinning of emergent consciousness that is in the process of coming on line (Rossi, 2000). It should not escape our notice that the perception of the positive qualia of creative experiences of art, beauty, and truth bridges the divide between the two cultures of modern society—the sciences and the humanities—which C. P. Snow (1960) regarded as a major hindrance in solving the world’s problems.

Interdisciplinary research is now required to assess the validity and reliability of utilizing implicit processing heuristics (IMPs) to facilitate the 4-stage creative process across many cultural, psychosocial, and molecular-

genomic levels (Geschwind & Konopka, 2009; Guzowski et al., 2001). The emergence of such interdisciplinary research on activity or experience-dependent gene expression is already evident in hypnosis and psychotherapy (Atkinson et al. 2010, Lichtenberg et al., 2000, 2004; Rossi et al. 2008, 2010), meditation (Dusek et al., 2008), music (Bittman et al., 2005), and many so-called “spiritual” practices such as Qigong (Li et al., 2005). We propose that such interdisciplinary research may identify molecular-genomic signatures as reliable and valid markers of creative states of consciousness during therapeutic hypnosis, meditation, psychotherapy, and many cultural varieties of spiritual practices without any metaphysical assumptions.

REFERENCES

- Aldrich, K. & Bernstein, D. (1987). The effects of time of day on hypnotizability. *International Journal of Clinical & Experimental Hypnosis*, 35(3), 141-145
- Atkinson, D., Iannotti, S., Cozzolino, M., Castiglione, S., Cicatelli, A., Vyas, B., Mortimer, J., Hill, R., Chovanec, E., Chiamberlando, A., Cuadros, J., Viro, C., Kerouac, M., Kallfass, T., Krippner, S., Frederick, C., Gregory, B., Shaffran, M., Bullock, M., Soleimany, E., Rossi, A., Rossi, K., Rossi, E., (2010). A new bioinformatics paradigm for the theory, research, and practice of therapeutic hypnosis. *American Journal of Clinical Hypnosis*, 53 (1), 27-46. Reprinted in Rossi, E., Erickson-Klein, R., & Rossi, K. (2010). *The Collected Works of Milton H. Erickson, M.D. Mind-Body Healing and Rehabilitation, Vol. 7. Chapter 30: A new bioinformatics paradigm for the theory, research, and practice of therapeutic hypnosis*. Phoenix, Arizona: The MHE Foundation Press.
- Avalon, A. (1924). *The Serpent Power*. Madras: Ganesh & Co.
- Bittman, B., Berk, L., Shannon, M., Sharaf, M., Westengard, J., Guegler, K.J., and Ruff, D. (2005). Recreational music-making modulates the human stress response: A preliminary individualized gene expression strategy,” *Medical Science Monitor*. 11(2): BR31-40.
- Bucke, R. (1902/1967). *Cosmic Consciousness: A Study in the Evolution of the Human Mind*. N.Y.: Dutton.
- Dusek, J., Hasan H., Wohlhueter, A., Bhasin, M., Zerbini, L., Joseph, M., Benson, H., Libermann, T. (2008). Genomic Counter-Stress Changes Induced by the Relaxation Response. *PLoS ONE* 3(7): e2576. doi:10.1371/journal.pone.0002576.
- Edmonston, W. (1986). *The induction of hypnosis*. N.Y.: Wiley.
- Frischholz, E. & Nichols, L. (2010). A historical context for understanding “An eye-roll test for hypnotizability” by Herbert Spiegel, M.D. *American Journal of Clinical Hypnosis*, 53:1, 3-13.

- Gelb, M. (1998). *How to think like Leonardo da Vinci: Seven steps to genius every day*. N.Y.: Random House.
- Geschwind, D. & Konopka, G. (2009). Neuroscience in an era of functional genomics and systems biology. *Nature*, *461*, 908-915.
- Guzowski, J., Setlow, B., Wagner, E., & McGaugh, J. (2001). Experience-dependent gene expression in the rat hippocampus after spatial learning: A comparison of the immediate-early genes Arc, c-fos, and zif-268. *Journal of Neuroscience*, *21*(14), 5089-5098.
- Li, Q., Li, P., Garcia, G., Johnson, R., & Feng, L. (2005). Genomic profiling of neutrophil transcripts in Asian *Qigong* practitioners: A pilot study in gene regulation by mind-body interaction. *Journal of Alternative and Complementary Medicine*, *11*(1): 29-39.
- 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 J. 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. *International Journal of Clinical of Experimental Hypnosis*, *52*, 47-72.
- Raichle, M., MacLeod, A., Snyder, A., Powers, W., Gusnard, D., & Shulman, G. (2001). *A default mode of brain function*. *Proc Natl Acad Sci USA*, *98*:676-82.
- Rossi, E. (1986). Altered States of Consciousness in Everyday Life: The Ultradian Rhythms. In B. Wolman (Ed.), *Handbook of Altered States of Consciousness*. NY: Van Nostrand Reinhold. Pp. 97—132.
- Rossi, E. (1986/1993). *The Psychobiology of Mind-Body Healing: New Concepts of Therapeutic Hypnosis*. NY: W. W. Norton.
- Rossi, E. (1991). The wave nature of consciousness. *Psychological Perspectives*, *24*, 1-10.
- Rossi, E. (1992a). Periodicity in self-hypnosis and the ultradian healing response: A pilot study. *Hypnos*, *19*, 4-13.
- Rossi, E. (1992b). The wave nature of consciousness: A new direction for the evolution of psychotherapy. In Zeig, J. (Ed.) *The Evolution of Psychotherapy: The Second Conference*. NY: Brunner-Mazel, pp. 216-235.
- Rossi, E (2000). *Dreams, Consciousness & Spirit: The Quantum Experience of Self-Reflection and Co-Creation*. (3rd Edition of *Dreams & the Growth of Personality*). NY: Zeig, Tucker, Theisen.
- Rossi, E. & Lippincott, B. (1992). The wave nature of being: Ultradian rhythms and mind-body communication. In Lloyd, D & Rossi, E (Eds.)

- Ultradian Rhythms in Life Processes: A Fundamental Inquiry into Chronobiology and Psychobiology* (pp. 371-402). NY: Springer-Verlag.
- Rossi, E. & Nimmons, D. (1991). *The Twenty-Minute Break: The Ultradian Healing Response*. Los Angeles: Jeremy Tarcher. NY: Zeig, Tucker, Theisen.
- Rossi, E. & Rossi, K. (2007). What is a Suggestion? The Neuroscience of Implicit Processing Heuristics in Therapeutic Hypnosis and Psychotherapy. *The American Journal of Clinical Hypnosis*, 49:4, 267-281.
- Rossi, E. & Rossi, K. (2008). Open Questions on Mind, Genes, Consciousness, and Behavior: The Circadian and Ultradian Rhythms of Art, Beauty, and Truth in Creativity. In Lloyd & Rossi (Eds.) *Ultradian rhythms from molecule to mind: A new vision of life*. New York: Springer. 391-412.
- Rossi, E, Erickson-Klein, R, and Rossi, K (2008). The Future Orientation of Constructive Memory: An Evolutionary Perspective on Therapeutic Hypnosis and Brief Psychotherapy. *American Journal of Clinical Hypnosis*, 50:4, 343-350.
- Rossi, E., Iannotti, S., Cozzolino, M., Castiglione, S., Cicatelli, A. & Rossi, K. (2008). A pilot study of positive expectations and focused attention via a new protocol for therapeutic hypnosis assessed with DNA microarrays: The creative psychosocial genomic healing experience. *Sleep and hypnosis: An International Journal of Sleep, Dream, and Hypnosis*, 10:2, 39-44.
- Rossi, E., Vyas, B., Atkinson, D., Iannotti, S., Cozzolino, M., Castiglione, S., Cicatelli, A., Vyas, B., Mortimer, J., Hill, R., Chovanec, E., Chiamberlando, A., Cuadros, J., Virot, C., Kerouac, M., Kallfass, T., Krippner, S., Frederick, C., Gregory, B., Shaffran, M., Bullock, M., Soleimany, E., Rossi, A., Rossi, K., Rossi, E., (2010). *What Makes Us Human? A Neuroscience Prolegomenon for the Philosophy of Evolution and Consciousness. Chapter 2* in *The Philosophy of Evolution* (Eds. UVS Rana, K Srinivas, NC Aery, AK Purohit; ISBN 978-81-86-882-35-9) by Yash Publishing House, 1 E-14, Pawanpuri, Bikaner, India. (E mail:pranaybooks@yahoo.com, yash_pub@yahoo.com.
- Snow, C. (1960). *The Two Cultures*. Cambridge: University Press.
- Spiegel, H. (1972/2010). An eye-roll test for hypnotizability. *American Journal of Clinical Hypnosis*, 53 (1), 15-18.
- Spiegel, H. (1974). The grade 5 syndrome: The high hypnotizability person. *International Journal of Clinical and Experimental Hypnosis*, 22, 303-319.
- Spiegel, H. & Spiegel, D. (1976). *Trance and treatment: Clinical uses of hypnosis*. N.Y.: Basic Books.
- Strogatz, S. (2003). *Sync: The emerging science of spontaneous order*. N.Y.: Theia.
- Tart, C. (1969). *Altered states of consciousness*. N.Y.: Wiley.
- Tinterow, M. (1970). *Foundations of Hypnosis: From Mesmer to Freud*. Springfield: Thomas.

- Tsuji, Y. & Kobayashi, T. (1988). Short and long ultradian EEG components in daytime arousal. *EEG & Clinical Neurophysiology*, 70, 110-7.
- Weitzenhoffer, A. (1971). Ocular changes associated with passive hypnotic behavior. *American Journal of Clinical Hypnosis*, 14, 102-121.
- Underhill, E. (1963). *Mysticism*. N.Y.: World.
- Ziv, N. & Ahissar, E. (2009). Neuroscience. New tricks and old spines. *Nature*, 462, 859—861.





PART TWO

AN EVOLUTIONARY VIEW
OF
THERAPEUTIC HYPNOSIS
& PSYCHOTHERAPY



