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&INTEGRATIVE THERAPY

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Contemporary Hypnosis and Integrative Therapy is the official publication of the British Society of Clinical and Academic Hypnosis and the European Society of Hypnosis in Psychotherapy and Psychosomatic Medicine, published on a quarterly basis. The intention of the journal is to provide a forum for the presentation and discussion of theory, research, and professional practices in the field of hypnosis and integrative therapy, with the general aim of furthering scientific understanding of the phenomenon and promoting informed and responsible use of hypnotic and consonant procedures.

The subject matter of the journal is defined by the practices, phenomena, theory, and research associated with the term 'hypnosis' since the middle of the nineteenth century. Articles on topics related to hypnosis will be considered in so far as they help to further the understanding of the nature and function of the basic phenomena; such topics might include, for example, physiological processes, sleep and dreaming, modified consciousness, imaginative processes, including imagery, absorption, and fantasy, role-playing, compliance, and obedience. *Contemporary Hypnosis and Integrative Therapy* welcomes research papers, case studies, reviews, etc., relating to the professional employment of hypnotic procedures and consonant interventions in clinical, educational, occupational, forensic, medical, and dental work.

Contemporary Hypnosis and Integrative Therapy is essential reading for anyone interested in contemporary research, ideas, and clinical practice in the field of hypnosis and integrative therapy.

CONTENTS VOL. 29, NO. 3, 2012

EDITORIAL COMMENTARY 208
Edoardo Casiglia

HYPNOSIS AS A VESTIGE OF THE BICAMERAL MIND
213
Marcel Kuijsten

FROM CONDITIONING TO STATE-DEPENDENT LEARNING 225
Maria Teresa Tosello

COMMUNICATION AND HYPNOSIS IN HIGH-TECH MEDICINE:
A CONVERSATION BETWEEN CHRISTEL J. BEJENKE AND MARK P. JENSEN 236
Christel J. Bejenke, Mark P. Jensen

AN EXPERIMENTAL APPROACH TO HYPNOTIC AGE REGRESSION:
CONTROLLED STUDY OVER 10 HEALTHY PARTICIPANTS 271
Nunzia Giordano, Valérie Tikhonoff, Maria T. Tosello,
Antonio M. Lapenta, Edoardo Casiglia

NEAR-DEATH EXPERIENCES AND HYPNOSIS: TWO DIFFERENT
PHENOMENA WITH SOMETHING IN COMMON 284
Enrico Facco

BOOK REVIEW: The Handbook of Contemporary Clinical Hypnosis:
Theory and Practice 298
Nicole Ruysschaert

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International Society of Hypnosis
International Hypnosis Congress 2012
October 17th to 21st 2012

Bremen, Germany

Welcome!

This is the 19th International Hypnosis Congress of the International Hypnosis Society, which dates its inception from 1889, and which has taken place every three years since 1973. The congress brings together leading experts from all over the world who represent a wide range of hypnotic skills, theoretical orientations and research interests. Numerous renowned hypnosis experts have replied to our invitation and will contribute to the congress. The ISH congress offers a pleasant atmosphere for speakers and participants from all over the world to meet, exchange ideas and learn from one another.

Structure of the Congress

The congress will offer a range of learning components with 3 hour and 1.5 hour workshops, lectures, panel discussions, symposia and keynote speeches. There will be many parallel events from which to choose what is most interesting for you and your work.

Congress Languages

German and English (and French)

The keynote presentations will take place in the largest room of the Conference Center as well as the largest workshops. These events will have simultaneous translation (German, English and French). All other presentations, in German or English, are without translation. It is possible that there will be a few workshops held in other languages (e.g. French) as we plan for a more international experience. Currently 15–20 parallel events in English and German are being planned.

Cultural Program

At this writing we have confirmation of some famous artists for a humorous and entertaining cultural program. On Saturday there will be a congress party. On Friday evening, directly in front of our congress Center “The Freimarkt of Bremen” will take place. This is the largest feast of the North, an almost 1000-year-old tradition, which predates the Oktoberfest by several hundred years.

EDITORIAL COMMENTARY

EDOARDO CASIGLIA

Department of Medicine, University of Padua

The modified state of consciousness known as hypnosis has a long and disputed history (see Table 1). Hypnosis was certainly practised in ancient times both as a painkiller in surgery and in religious ceremonies (Kuijsten, 2012), as documented by manuscripts, archaeological finds, and images like those showing arm levitation. For a long time, archaic people were only instinctive (until 30,000 BC), then only unconscious (until the late Bronze Age), and it was only recently (Jaynes, 1976) that the egoic consciousness made its appearance. Being a modification of consciousness, hypnosis requires consciousness, and must therefore date back to 1300 BC. However, the modes and actual in-depth knowledge with which ancient hypnosis was practised are unknown.

Table 1. Historical phases of hypnosis

Phase	**Period**
Archaic	After 1300 BC
Ancient	Until 17th century
Modern	19th to 20th century, at the age of psychoanalysis
Contemporary	21st century

More recently (after Mesmer, Charcot, Freud, and Jung), hypnosis was mainly practised in the field of psychotherapy and as a painkiller before anaesthetics were made available (this is well documented by many surgeons who operated with the aid of hypnosis at our University of Padua). In the 19th century, hypnosis sank into oblivion due to the development of psychoanalysis, the growing emphasis on the unconscious, and psychoanalysts' fear of being too intrusive, and was rightfully revived only after the Second World War. Ignored by psychologists, it was exploited by medical doctors who realized it was a powerful, versatile, and rapid tool (Casiglia et al., 1994)—sharp like a razor, embrocating like an ointment, and curative like penicillin.

Contemporary hypnosis, which we practise in our laboratories today, is very different from the ancient, the old, and even from the modern types. First of all, it is strongly experimental and evidence-based rather than theory-based. It is developed in laboratories and its results are statistically analysed. When we started dealing with hypnosis in our laboratory, we

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immediately realized that experiments performed with the 'hypnosis' tool would necessarily be experiments in human physiology (Casiglia et al., 2012b, 2012c). Most of our research group activity in hypnosis aims at adopting the scientific, Galilean method of 'try and retry'. In order to carry this out, we first have to construct all our experimental models—which, in hypnosis, generally do not exist—just like Galileo built his own telescopes. Like a telescope, a conceptual model is an optical tube that employs a privileged point of view to observe the unknown (these metaphors perfectly suit hypnosis, a discipline that speaks a symbolic language whose terms are metaphors (Casiglia, 2008)).

We adopted Galilean methods to demonstrate that hypnosis-induced hallucinations (Casiglia et al., 1997, 2006), negligence (Casiglia et al., 2010; Priftis et al., 2011), analgesia (Facco et al., 2009, 2011; Casiglia et al., 2007), and age regression (Giordano et al., 2012) are not mere subjective feelings but true, objective phenomena that can be reproduced, counted, and numerically measured. We have demonstrated that, when we give the command 'you are unable to speak' or 'to read' or 'you are unable to move the right part of your body' or 'you are 6 years old', participants essentially become physically mute or alexic (word blind), paralytic, amusic (tone deaf), affected by neglect, or children outright (Casiglia et al., 2010; Priftis et al., 2011; Giordano et al., 2012). And, if the command is to become insensitive, painful stimuli are indeed blocked at a certain level of the ascending nervous system and not simply dissociated from consciousness. Obviously, far from providing all the answers, this experimental evidence gives rise to many questions about the physiological mechanisms of hypnosis and shows that hypnosis is based on weak theories. The neuroimaging techniques we are currently applying are certainly useful but do not answer all queries (Priftis et al., 2011; Casiglia et al., 2012a).

Contemporary hypnosis is also translational, as lab experimental discoveries always—and I mean, always!—have a positive clinical outcome, and are immediately applied to ailing or distressed people. As a matter of fact, patients who undergo hypnosis in an experimental setting invariably feel better, emotionally richer and brighter. What a wonderful procedure! Quick, cheap, straightforward, and tailored for Homo sapiens (Casiglia, 2008; Kuijsten, 2012b).

Finally, contemporary hypnosis is teamwork. Although psychologists tend to work alone, medical doctors generally work in teams, even when dealing with hypnosis. Hypnosis is just a field where different areas of expertise are welcome. Our staff members are made up of neurologists, psychiatrists, and psychotherapists as well as physiologists, radiologists, pharmacologists, cardiologists, and anaesthetists.

As mentioned above, contemporary hypnosis is experimental in nature. However, I must emphasize the fact that there is also a branch of contemporary hypnosis that is to lab practice as theoretical physics is to experimental physics. A closed circle of researchers (see for instance Casiglia, 2008; Facco, 2012; Kuijsten, 2012a, 2012b; Tosello, 2012) is actually trying to develop theories that might explain hypnosis and its phenomenology on the basis of philosophic concepts, archaeological data, anthropology, and the study of the language and quantum mechanics. After all—like hypnosis itself—these sciences pertain to consciousness. This branch of research has important ethical implications.

When I was unworthily offered to succeed John Gruzelier as Editor of *Contemporary Hypnosis* (now *Contemporary Hypnosis and Integrative Therapy*), I had in mind what I summarized above. Consequently, readers now know in advance what I think the future editorial line of this journal should be: very experimental, contemporary, multidisciplinary, open not only to

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scientific requirements but also to philosophic, literary, and anthropological themes; a journal that attracts scientists of different backgrounds.

Everybody is required to take part in this project, not only the editorial committee and my local co-workers, but also and particularly readers and all the scientists operating in the field of hypnosis. I hope they will contribute by writing innovative papers. As far as we are concerned, we will make this more appealing by speeding up the selection process and by increasing the worldwide visibility of the journal and its impact on the scientific community.

So, let's get down to work, dear colleagues and friends! We look forward to receiving your papers.

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HYPNOSIS AS A VESTIGE OF THE BICAMERAL MIND

MARCEL KUIJSTEN

Julian Jaynes Society, Henderson, Nevada, USA

ABSTRACT

Biological theories of the origin of consciousness are unsupported by evidence and fail to account for altered states of consciousness such as hypnosis. Julian Jaynes's theory of the origin of consciousness and a previous mentality called the bicameral mind better explain both the nature of consciousness and hypnosis. Evidence suggests that hypnosis may be a vestige of the bicameral mind. Hypnosis and bicameralism both involve compliance to an externally perceived voice, both are thought to involve right hemisphere dominance, several personality characteristics are associated both with individuals who are highly susceptible to hypnosis and Jaynes's characterization of bicameralism, and historical accounts suggest hypnosis was even more effective in ancient history than it is today.

Key words: consciousness, hypnosis, bicameral mind, Julian Jaynes

INTRODUCTION

Hypnosis, defined succinctly by Spiegel and Spiegel (2004) as 'a state of highly focused attention coupled with a suspension of peripheral awareness', remains one of the great mysteries of psychology. Despite decades of modern research and more than 150 years of experimentation, the precise nature and underlying neurology of hypnosis remains elusive. What exactly is the trance state? Why does it exist? How is it that consciousness can so easily be altered by such a wide variety of relatively simple induction procedures? Is hypnotic trance related to other dissociative states such as 'possession', poetic frenzy, and glossolalia (speaking in tongues)?

The lack of clear understanding of hypnosis can be attributed to several factors. First, while it has been embraced by clinicians, within academic psychology hypnosis (along with other psychological anomalies such as 'possession') has often been marginalized as a topic of research. Second, the prevailing view of consciousness as biologically innate is likely inaccurate and thus leads to confusion about the nature of hypnosis. Third, hypnosis is typically studied as a modern phenomenon and is not viewed in a historical context. The reasons for the first point—having to do primarily with psychology's struggle to wrestle free from philosophy and be viewed as a hard science—are beyond the scope of this article. My focus will be on points two and three; the elaboration of which I hope will provide a better framework within which to understand the nature of hypnosis.

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RETHINKING THE NATURE OF CONSCIOUSNESS

To understand the altered state of consciousness we call hypnosis, we must first understand the nature of consciousness itself. The prevailing view that consciousness evolved biologically through natural selection over hundreds of thousands (or millions) of years and is an innate characteristic in modern humans, while tacitly accepted by many, is unsupported by evidence. The biological view of consciousness stems in part from the misconception (often promoted by neurologists) that consciousness consists of everything that happens in the mind unless a person is asleep or rendered unconscious.

If the innate, biological view of consciousness were accurate, differences in the nature of consciousness between pre-literate and literate societies, as well as linguistic and non-linguistic individuals, would not exist (Ong, 1982/2002; Carruthers & Boucher, 1998). Furthermore, the dramatic alteration of consciousness through hypnosis should not be possible. Widespread tacit acceptance of the biological view of consciousness is undoubtedly one of the primary reasons that individuals with no direct experience with hypnosis often have great difficulty accepting the existence of hypnosis as a distinct mental state: if consciousness is an innate, biological feature common to all people, how can it be so easily and dramatically altered through mere language?

In his book *The Origin of Consciousness in the Breakdown of the Bicameral Mind* (1976/1990), Princeton University psychologist Julian Jaynes (1920–1997) proposes an alternate theory of the origin of consciousness—one that better takes into account the evidence as well as offering explanations for many of the anomalies of psychology such as hypnosis, 'possession', and other dissociative states. Rather than an inherent biological function, Jaynes argues that consciousness is a learned process based on language and is taught to each successive generation. Consciousness—as Jaynes carefully defines it—is thus uniquely human and arose sometime after the development of language. The learned nature of consciousness accounts for both its variability—for example, in individuals with delayed language acquisition—as well as its malleability, which can be seen in altered states of consciousness such as hypnosis, 'possession', poetic frenzy, and glossolalia (speaking in tongues).

OVERVIEW OF JAYNES'S THEORY

Julian Jaynes dedicated his life to understanding the origin and nature of consciousness. Jaynes initially experimented with animals, 'delicately running individual paramecia in a T-maze engraved in wax on black Bakelite', then moving on to 'species with synaptic nervous systems, flatworms, earthworms, fish, and reptiles' (Jaynes, 1976/1990). Although he later realized he was not studying consciousness in these animals at all, these experiments nonetheless helped him to refine his definition of the term. Jaynes asserts that the reason for much of the ongoing confusion over the nature of consciousness is the failure to properly define it. This problem continues today, with speakers at consciousness conferences rarely defining consciousness directly and often discussing consciousness in ways that imply dramatically different definitions.

Jaynes sets about defining consciousness by first clarifying what it is not. First, he demonstrates that consciousness is not all mentality. Things like vision, movement, and even speech are accomplished without consciousness. In the case of speech, one starts with a general idea or intention of the thoughts to be conveyed, and the words then come automatically. Further, Jaynes argues that it is a mistake to equate consciousness with sense perception, as even white

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blood cells are able to react to their environment and would therefore have to be considered conscious. Second, Jaynes argues that consciousness is not a copy of experience, pointing out the absence of memories we have for common things we encounter, such as which letters are associated with which numbers on a telephone or the fact that our memories of certain events, such as swimming, often take a different point of view than the actual experience. Third, Jaynes explains that consciousness is not necessary for learning. Conditioned responses happen outside of consciousness, as does learning motor skills such as typing. Finally, Jaynes argues that consciousness is not necessary for thinking or reasoning. While this notion is at first counter-intuitive, Jaynes describes experiments that show that when making a judgement—for example, between which of two weights is heavier—the solution comes automatically. Similarly, when viewing a series, for example of geometric shapes, the determination of which figure comes next happens automatically and without introspection. Furthermore, scientists and others often experience solutions to problems in a flash of insight, often when not even thinking about the problem. Consciousness may be involved when setting up the problem, then during a period of incubation (often during sleep) the solution to the problem is resolved outside of consciousness. Related research by other scholars suggests that the majority of mental functioning takes place outside of conscious awareness, with consciousness often rationalizing behaviour after the fact (Norretranders, 1999).

Jaynes concludes that consciousness is not an all-or-nothing proposition but rather a package of features that are learned through metaphorical language. These features include an analogue 'I' (that can move about in mind-space in the same way the bodily 'I' can move about in actual space), narratization (the analogic simulation of actual behaviour), spatialized time (how we locate events and our lives on a timeline), as well as '*concentration*, the "inner" analogue of external perceptual attention; *suppression*, by which we stop being conscious of annoying thoughts, the analogue of turning away from annoyances in the physical world; *excerption*, the analogue of how we sense only one aspect of a thing at a time; and *consilience*, the analogue of perceptual assimilation; and others' (Jaynes, 1986; author's italics).

It is through metaphor that we establish an inner world that allows us to introspect. Jaynes writes: 'Subjective conscious mind is an analogue of what we call the real world. It is built up with a vocabulary or lexical field whose terms are all metaphors or analogues of behaviour in the physical world. Its reality is of the same order as mathematics. It allows us to short-cut behavioural processes and arrive at more adequate decisions. Like mathematics, it is an operator rather than a thing or a repository. And it is intimately bound with volition and decision' (Jaynes, 1986).

Jaynes goes on to note that the language we use to describe mental events is primarily visual: 'We "see" the solutions to problems, the best of which may be "brilliant" or "clear" or possibly "dull," "fuzzy," or "obscure." These words are all metaphors, and the mind-space to which they apply is generated by metaphors of actual space' (Jaynes, 1986).

When did this inner world first appear? In looking at the oldest reliable texts, he found that consciousness disappears in the oldest layers of the *Iliad*. In other words, there is no evidence of introspection. 'People are not sitting down and making decisions. … No one is introspecting. No one is even reminiscing. It is a very different kind of world' (Jaynes, 1986). There is no concept of will, and the body is referred to by various parts, but never as a whole (Snell, 1953; Jaynes 1976/1990). Furthermore, words that in a later age come to refer to things related to the mind all have more concrete meanings in the *Iliad*. For example, 'the word *noos* which …

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comes to mean conscious mind ... comes from the word *noeein*, to see. Its proper translation in the *Iliad* would be something like perception or recognition of the field of vision. Zeus "holds Odysseus in his noos." He keeps watch over him' (Jaynes 1976/1990; author's italics).

This, together with a great deal of anthropological evidence, led Jaynes to a comparatively recent date for the development of subjective consciousness—roughly 1200 BC in areas such as Greece, Egypt, and Mesopotamia. The work of other scholars provides additional support for this dating. According to the historian Chester Starr (1968), for example, the Greeks did not develop the modern concept of history until as recently as 700 BC. The development of consciousness has been documented in China during roughly the same time period by the sinologist Michael Carr (2006). In the Americas and in isolated places such as Easter Island, evidence suggests that consciousness developed even more recently.

THE BICAMERAL MIND

This recent date for the development of consciousness is at first startling. If consciousness developed this late, how was anything accomplished in the ancient world? Prior to the development of consciousness (keeping in mind Jaynes's precise definition), Jaynes argues that humans could communicate, learn, organize, and problem-solve, but did so without introspection. Behaviour was largely habitual, but during the stress of decision-making, the brain used language to convey experience from the right hemisphere to the left hemisphere in the form of verbal commands. So rather than introspecting upon a course of action, people in ancient civilizations were directed by verbal commands that they interpreted as that of their leader, king, dead ancestors, or the gods. Today we call these voices auditory hallucinations.

According to Jaynes, at this time the brain hemispheres operated in a less integrated manner than they do today. Ancient man had a 'god-side' (right hemisphere) and a 'man-side' (left hemisphere) and neither side was conscious. Jaynes called this earlier mentality the 'bicameral mind', based on the metaphor of a bicameral legislature. Jaynes believes the bicameral mind evolved along with language as a method of focusing attention as well as a form of social control for the agricultural-based societies that emerged around 9000 BC. It was not until language developed to a certain level of complexity, writing emerged and became widespread, and populations grew to sizes no longer manageable, that the bicameral mentality broke down and consciousness was learned as a more effective way of dealing with novel situations.

Initially shocking, Jaynes supports his re-interpretation of human history and psychology with a wide range of evidence. Jaynes notes studies in which hallucinations were evoked through stimulation of the right temporal lobe. An analysis of ancient texts such as the *Iliad* and the Old Testament provide many examples of individuals who, in times of stress or decision-making, are provided direction by a hallucinatory voice (interpreted as that of a god). In Egypt, we see the hallucinatory guiding voice described as a person's *ka*. Later, in Rome, it was referred to as one's *genius*. Idols, viewed not as representations of gods but as the gods themselves, were widespread and served as hallucinatory aids. Furthermore, dreams in the ancient and modern world show a stark contrast. Dreams during the bicameral period often consisted of visitation dreams, where the dreamer perceives himself as asleep in bed and then visited by a god or spirit who issues a command; it is not until after the advent of consciousness that the dream experience changes to perceiving oneself acting out events in other locations (Harris,

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2009; Jaynes, 2012). Evidence suggests that children's dreams go through a similar transition as they acquire language (Foulkes, 2002).

Jaynes presents evidence that after the transition from bicamerality to consciousness, hallucinations were suppressed in most people, resulting in the widespread loss of hallucinatory guidance. Oracles, prophets, and divination emerged as an attempt to discern the will of the now-silent gods, and ancient texts such as the *Ludlul Bel Nemequi* chronicle the departure of the gods. Later, religious reformers such as Jesus promoted the concept of one God to replace the many gods previously heard and worshipped, and the world's modern religions emerged to fulfil the longing for the lost direct connection with the gods. For a full discussion of the theory and its supporting evidence, readers are referred to Jaynes's original works (Jaynes, 1976/1990; Kuijsten, 2012).

Since the publication of Jaynes's book (1976/1990), a great deal of subsequent evidence has offered further support for his theory. For example, much more has been written on the relationship of consciousness and language (Carruthers, 1998). Auditory hallucinations occur far more frequently in the normal population than is widely known and have been documented in a wide variety of populations, including children, students, the elderly, high altitude climbers, and individuals under stress, in combat, or in isolation (Watkins, 2008). Auditory hallucinations as a form of behavioural control have been documented in pre-literate societies worldwide (Levy-Bruhl, 1923/1975). Imaginary companions in children are more frequent than previously known, and are believed to involve actual hallucinations (Pearson et al., 2001). The hallucinations of patients labelled schizophrenic often take the form of behavioural commands (Erkwoh et al., 2002). Beginning in 1999, neuroimaging studies confirmed Jaynes's hypothesis of a right–left temporal lobe interaction in auditory hallucinations (Lennox et al., 1999) and this finding has since been confirmed by numerous other studies (Jardi et al., 2007; Diederen & Sommer, 2009). Split-brain research and hemispherectomy cases demonstrate that the brain hemispheres can operate both independently and in isolation, similar to their more independent function in the bicameral era (for a discussion see Kuijsten, 2012).

Remnants of the transition from bicamerality to consciousness remain all around us. Vestiges of the bicameral mind can be seen in a wide range of phenomena such as the occasional hallucinations heard by normal, non-psychotic people, the command hallucinations of schizophrenia patients, the loss of personal authorization in hypnosis, related trance states such as 'possession' and poetic frenzy, the imaginary companions of children, and the nostalgic quest of modern religions for the lost voices of the gods.

HYPNOSIS AS A VESTIGE OF THE BICAMERAL MIND

The bicameral mind theory provides the historical context necessary to properly understand the nature of hypnosis. In the bicameral period, during times of decision-making the brain used language to transmit experience from one hemisphere to the other in the form of auditory hallucinations perceived as an external voice. Research on the neurology of auditory hallucinations suggests that in the bicameral mentality the language areas of the right hemisphere were active and that these areas are typically suppressed in normal conscious individuals today (Diederen & Sommer, 2009). As will be discussed below, research indicates that hypnosis also involves right hemisphere dominance. Thus both the bicameral mentality and hypnosis are thought to involve a shift in hemisphere dominance accompanied by compliance to an

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externally perceived voice. In hypnosis, the hypnotist temporarily takes over the role of the bicameral voice, in some cases guiding the person to change behaviours ordinarily outside of conscious control.

Several lines of evidence suggest that hypnosis can be viewed as a vestige of the bicameral mind. Jaynes discusses correlational evidence including early studies that show hypnotic susceptibility is associated with right hemisphere dominance, and more recent studies of brain activity during hypnosis generally confirm this view. Jaynes notes personality characteristics associated with highly hypnotizable individuals that are also associated with the right hemisphere-dominant bicameral mentality (individuals who are either more creative, highly religious, had imaginary companions as a child, or had a strict childhood upbringing). Finally, evidence suggests that during the transition from bicamerality to consciousness, hypnosis and associated trance states were more widespread than they are today.

The first area of evidence suggesting hypnosis is a vestige of the bicameral mind is studies correlating hypnotic susceptibility with hemisphere dominance. Electroencephalography (EEG) and magnetic resonance imaging (MRI) studies of hypnosis were not available when Jaynes published his book, however Jaynes (1976/1990) notes that hemisphere dominance can be determined by asking a person a question and noting which way their eyes move as they think of the answer. In right-handed individuals, eye movement to the person's right indicates left hemisphere dominance, while eye movements to one's left indicate right hemisphere dominance. Jaynes cites a study describing greater hypnotic susceptibility in those with right hemisphere dominance (Gur & Gur, 1974). Bakan (1969) also reports 'a predominance of left eye-movements is associated with greater hypnotizability'. Later studies using more advanced techniques such as EEG and MRI have largely confirmed the view that hypnosis is associated with increased activity in the right hemisphere. Based on the evidence, Pedersen (1984) argues that 'the state of hypnosis is right hemisphere-oriented. We can postulate that the mechanism of going into an hypnotic state involves either a shift into right hemisphere function, or an inhibition of the left hemisphere, or both.'

Mészáros and Szabó (1999) report that 'using FFT [fast Fourier transform] spectrum of 16 channel EEG recording, it was demonstrated that in highly susceptible subjects the right parieto-temporal region shows more electric power than the left while the low susceptibles have left side predominance or equilibrated power in all derivations … On the basis of these results we can confirm the importance of the right parieto-temporal associative area in the alteration of consciousness characterizing [the] hypnotic state.' These are precisely the brain areas implicated in the bicameral mind, with both auditory hallucinations (Kuijsten, 2006) and the feeling of a sensed presence (Persinger & Makarec, 2004) being associated with right temporal lobe activity.

An EEG study by Fingelkurts et al. (2007) reports that 'hypnosis was characterized by consistent right-side-dominance asymmetry' while an EEG study by Gruzelier et al. (1984) suggests left hemisphere inhibition under hypnosis. In a more recent discussion, Gruzelier (1996) reports research indicating that while 'hypnosis produced an accentuation of right hemispheric influences, high susceptibles in the prehypnosis state showed asymmetry favoring the left hemisphere, and hypnosis brought about a *reversal* of asymmetry'. A number of other studies also suggest greater right hemisphere activity during hypnosis (Graham & Pernicano, 1979; Naish, 2010), while others have highlighted the role of the left hemisphere (Jasiukaitis et al., 1997) or left–right hemispheric interaction (Halsband et al., 2009; Spiegel et al., 2010). Al-

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though the precise brain networks involved in the hypnotic state are currently unknown, likely complex, and vary depending on the task, the weight of the evidence indicates greater right hemispheric activity in hypnosis, as is also hypothesized in the bicameral mentality.

Jaynes also discusses personality characteristics associated with both hypnotic susceptibility and the bicameral mentality. The first is the correlation of hypnotic susceptibility with more creative, visual individuals. Drawing on Stanford University psychologist and psychiatrist Josephine Hilgard's (1970) research on hypnosis and personality characteristics, Jaynes notes that more creative (and, presumably, more right hemisphere dominant) individuals scored higher on hypnotic susceptibility tests. The relationship between hypnotic susceptibility and creative individuals was also noted by Bowers and van der Meulen (1970), who found that highly hypnotizable subjects scored significantly better than low hypnotizable subjects on eight out of nine creativity subtests. In a review of the research on creativity and hypnosis, Bowers and Bowers (1979) conclude that 'creativity, hypnotizability, and effortless experiencing of imagery, fantasy, and creativity test responses are interrelated'. The relationship between hypnotic susceptibility and creative individuals provides further evidence that hypnosis involves a greater degree of right hemisphere activity, as is also believed to be the case with the bicameral mind.

Also suggestive is the correlation of hypnotic susceptibility with individuals who display higher levels of religiosity. Hilgard (1970) found that individuals who reported 'a deep sense of religious involvement' scored high on hypnosis susceptibility measures. Similar findings have been noted by Gibbons and de Jarnette (1972) and Hood (1973). As religiosity can also be viewed as a vestige of bicameralism (Jaynes, 1976/1990), the correlation between increased hypnotic susceptibility and heightened religiosity provides further evidence for hypnosis as a vestige of the bicameral mind. It should be noted that Jaynes's bicameral mind theory offers the only explanation for the fact that religiosity, auditory hallucinations, the feeling of a sensed presence (Persinger & Makarec, 2004), and dissociative states such as 'possession' (Mesulam, 1981) are all associated with the right temporal lobe. In the absence of Jaynes's theory, cases of sudden religious conversion in temporal lobe epilepsy (Dewhurst & Beard, 1970) are very difficult to explain.

Hypnotic susceptibility is also correlated with individuals who had imaginary companions as children. Hilgard (1970) found that while children in general who reported having an imaginary companion did not score higher on hypnotic susceptibility tests, children 'who were able to give descriptive information about their claimed imaginary companion' did. Some children experience a 'conscience-related' imaginary companion: one who 'criticizes (or sometimes dares) … is concerned with right or wrong, of propriety and impropriety' (Hilgard, 1970). Interestingly, the children who reported a conscience-related imaginary companion scored highest in hypnotic susceptibility. The correlation of hypnotic susceptibility with imaginary companions was also reported by Myers (1983), who found that the 'imaginative-fantasy abilities of individuals is related positively to their responsiveness to suggestions in hypnotic situations'. As noted previously, imaginary companions are another vestige of the bicameral mind. Far more prevalent than previously believed—a large study of 1,800 children reported that 46% of children experience imaginary companions (Pearson et al., 2001)—imaginary companions are thought to involve actual hallucinations. They are socialized out of most children by their parents; however, some children retain their imaginary companions into adulthood. In ancient civilizations, this was the guiding hallucinatory voice that was interpreted as the gods or

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dead ancestors. The most significant similarities exist between the bicameral guiding voice and 'conscience-related' imaginary companions.

Another area of evidence for hypnosis as a vestige of bicamerality is the correlation of hypnotic susceptibility with those who experienced a strict childhood upbringing. Hilgard (1970) reported that 'year after year we have found a relationship—always in the same direction, occasionally highly significant statistically—associating severity of punishment in childhood with high hypnotizability'. Similarly, Cooper (1976) found that 'the parents of the more [hypnotically] susceptible children saw themselves as more demanding and strict with their children than did the parents of low susceptible children'. The enhanced relationship with authority brought about by strict parenting parallels the compliance to the voices seen in historical accounts of the bicameral mind (and, as mentioned previously, in patients diagnosed as schizophrenic, who often obey their hallucinatory commands).

Finally, evidence that hypnosis and trance states were more widespread in the past is suggestive that hypnosis is a vestige of the bicameral mind. As noted by MacHovec (1975), 'books on hypnosis and the history of psychology contain very little detailed information on the use of hypnosis before Mesmer'. Yet historical evidence suggests that as the transition from bicamerality to consciousness was taking place, trance states were far more frequent and widespread than they are today. Jaynes (1976/1990) notes the widespread occurrence of oracles and prophets that entered into dissociative states when giving their prophecy. MacHovec (1975) states that there is 'abundant evidence which shows that hypnosis or a similar induced altered state of consciousness was used in ancient Greece, Egypt, India, China, Africa, and pre-Columbian America'. Furthermore, McCartney (1968) notes: 'The Hindu Vedas, about 1500 BC, mention the use of hypnosis … The Ebers Papyrus gives an account of the medical methods practiced in Egypt about this time, and mentions "laying on of hands on the heads of patients", as part of the treatment. The tribes of Israel, the Chaldeans, the Zoroastrians, and the ancient Hebraic Bible, mention the use of hypnosis, although, of course, not using the term *hypnosis*.'

There are many possible references to hypnosis in the Bible (Glasner, 1955). In one example, hypnotic anaesthesia is alluded to in the story of Genesis (2:21–22): 'So the Lord God caused a deep sleep to fall upon man, and while he slept, took one of his ribs …' Biblical accounts of so-called miracles are at least suggestive that individuals during the first century demonstrated a higher responsiveness to hypnosis than is typically seen today. Many of the acts of Jesus (whether taken as historical fact or as fables representative of customs of the time) can be viewed as possible instances of individual as well as group hypnosis (Wilson, 2000). As noted by Glasner (1955), 'When we come to the New Testament, we find a great number of miraculous cures which might be explained in whole or in part in terms of suggestion, which is the basis of hypnosis.' Perhaps the first to advance this view was the 19th century German theologian David Friedrich Strauss. Writing extensively on the life and miracles of Jesus, he considers hypnosis the most likely explanation for the healings attributed to Jesus (Strauss, 1892). Van Der Loos (1965) notes that in 1894, 'the French doctor P. A. Desjardin published under the pseudonym Paul De Régla a study of Jesus of Nazareth in which he ascribes all miracles to suggestion and hypnosis'. McCartney (1968) suggests that 'Christ during his ministry obviously used hypnotic suggestion most effectively'. Based on passages from the New Testament, Edmonston (1986) concludes that Jesus 'used eye fixation, soothing suggestions, a laying on of hands, and posthypnotic suggestions as hypnotic procedures for the cure of various disorders'. The argument for Jesus as hypnotist becomes easier to accept when one realizes that

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so-called miracle workers were not uncommon during the time of Jesus (Koester, 1982/2000; Koskenniemi, 2005). As described by Koester (1982/2000): 'Miracles were performed not only by Christian missionaries ... but also by Jewish preachers, Neopythagorean philosophers, and by many other teachers, physicians, and magicians. The entire scale of miraculous deeds of power was commonly used, from magical tricks to predictions of the future, from horoscopes to the healing of diseases and maladies, even the raising of dead people.'

Two other so-called miracle workers located in Galilee around the time of Jesus were Honi the Circle-Drawer and Hanina ben Dosa. Both were said to have healed the sick and performed exorcisms (Powell, 1998). Outside of Palestine, the miracle workers Apollonius of Tyana appeared in eastern Asia Minor and Simon Magus in Samaria (Stegemann & Stegemann, 1999), both in the first century AD. If hypnosis is a vestige of the bicameral mind, it stands to reason that the recently conscious mind circa 1200 BC–500 AD was more responsive to hypnosis than the modern, literate mind. That the healings reported historically are often more significant than what can typically be expected with hypnosis today seems to bear this out. It also underscores the importance of belief, individual as well as cultural expectation, and confidence in the hypnotist in hypnotic outcomes.

CONCLUSION

Biological theories of the origin of consciousness are unsupported by evidence and fail to account for altered states of consciousness such as hypnosis. Julian Jaynes's theory of the origin of consciousness and a previous mentality called the bicameral mind better explains both consciousness and the nature of hypnosis. The bicameral mentality and hypnosis both involve right hemisphere dominance accompanied by compliance to an externally perceived voice. In the bicameral period, during times of decision-making the brain used language to transmit experience from one hemisphere to the other in the form of auditory hallucinations perceived as an external voice. In hypnosis, evidence suggests that the hypnotist encourages a shift to right hemisphere dominance (thus diminishing the sense of self) and temporarily assumes the role of the bicameral guiding voice. Hypnosis in turn illuminates the view that consciousness is learned by demonstrating how easily consciousness can be altered through language, how our habits and motivations lie largely outside of consciousness, and how powerful changes are often most easily accomplished not through conscious will but rather by bypassing consciousness.

The relatively recent origin of consciousness proposed by Jaynes raises interesting questions as to how consciousness may be continuing to change today. Many areas relevant to this question remain to be explored. If consciousness is a recent development historically, in what ways might consciousness develop in the future? Will the growing ubiquity of technology have a positive or a detrimental effect on consciousness? What methods can be used to better train consciousness in children as well as adults? Using hypnosis or other methods such as neurofeedback, to what degree can one gain greater control over unconscious and habitual influences on thought and behaviour? Understanding that consciousness is learned and not innate should encourage individuals to use tools such as hypnosis, visualization, and meditation practices to expand the scope of consciousness and exercise greater control over unconscious responses and habitual behaviour.

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FROM CONDITIONING TO STATE-DEPENDENT LEARNING

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ABSTRACT

In re-examining whether mankind can rely on a free will, conditioning is first taken into consideration in its two types as a learning process typical of mobile beings and as a form of hypnotic trance. Rossi and Cheek's research work on the unconscious perception of meaningful sounds during surgical anaesthesia led to the belief that Pavlov's and Skinner's conditioning is a form of state-dependent memory learning and behaviour (SDMLB), a hypothesis shared by other researchers. SDMLB is analysed with its consequences on free will and contrasted with a personal belief in a new law, 'the law of imperfection', which undermines all rules and certainties.

Key words: learning, behaviour, state-dependent learning and behaviour, 'law of imperfection'

INTRODUCTION

Conditioning is just one form of the many processes with an adaptive value. It apparently unfolded with many others in the course of natural selection to favour the development of the ambitious project of some wanton boy with a lot of clay, or primordial matter, at his disposal and no need to be logical, economical, or productive, as the high percentage of discarding and extinction proves (perhaps over 80%). So far, the main determinants of our behaviour are biological, environmental, cognitive, and unconscious. Yet, here we are, once more, to re-examine whether mankind can rely on a free will.

A FAMOUS CONDITIONING

Very few people have read Marcel Proust's seven-volume masterpiece, *À la recherche du temps perdu* (1913–1927/1954), but almost everybody knows what a *madeleine* is and the profound influence of an ever-present conditioning on the Western cultural and literary history of the twentieth century. In exploring the power of memory and the unconscious, Proust states that it is the artist's task to recover, together with lost times, the vital non-material elements to which habits have made us blind (in opposition to Sainte-Beuve's popular view that in order to understand an artist and his work we must understand his biography).

Thirty years after his childhood holiday at Combray, Proust tastes a *madeleine*, a biscuit, dipped in a cup of tea:

… et tout d'un coup le souvenir m'est apparu. Ce goût, c'était celui du petit morceau de madeleine que … ma tante Léonie m'offrait après l'avoir trempé dans une infusion de thé ou de

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tilleul. La vue de la petite madeleine ne m'avait rien rappelé avant que je n'y eusse goûté ... mais quand d'un passé ancient rien ne subsiste, après la mort des êtres, après la destruction des choses, seules, plus frêles mais plus vivaces, l'odeur et la saveur restent encore longtemps comme des âmes, à se rappeler, à attendre, à espérer, sur la ruine de tout le reste, à porter sans fléchir, sur leur gouttelettes presque impalpable, l'édifice immense du souvenir.

Memory beats ruins and time. For many of us, Proust's experience was a splendid example of classical conditioning (in a cenaesthesic subject) yesterday, and of a state-dependent memory today.

WHAT IS CONDITIONING?

Two contemporary geniuses laid the foundations for a scientific study of the mechanisms and laws of mind–body communications: Freud and Pavlov. Freud picked out the roots of anxiety: 'Goaded by the id, hemmed in by the superego, and rebuffed by reality, the ego struggles to cope, but when it is forced to acknowledge its weakness, it breaks out into anxiety' (Freud, 1968). Pavlov, a Russian physiologist, identified the force of the conditioned (classical) reflex (typical of the dreamers) and opened the way to the awareness of the strength of a second conditioning force: the operant (to be found in the doers). He introduced the word 'conditioning' while studying the process of salivation in dogs strapped into a harness, by making holes in their cheeks (Babkin, 1949).

If someone looks up the word 'conditioning' in an English or an Italian dictionary, very seldom can he find it. Alternatively he is invited to look for another word, 'learning', of which it is an extremely simplified form, and which is defined as 'any relatively permanent change in activity that results from experience with the physical and social environment' (Morgan & King, 1956), which memory can then make available for problem-solving.

According to the *Encyclopædia Britannica*, 'conditioning' is a form of learning in which either (1) a given stimulus becomes increasingly effective in evoking a response, or (2) a response occurs with increasing regularity in a well-specified and stable environment. In physiology, it is a behavioural process whereby a response becomes more frequent or more predictable in a given environment as a result of reinforcement. Conditioning can also be defined as 'two types of an elementary associative learning process, seen in many invertebrates and all vertebrates' or frail mobile beings to better adapt them and survive in a contradictory, inconsistent world where the primitive forces of their emotions are dangerous and devastating. Being relatively free of innate and automatic behaviours, man is the most adaptable and flexible of all species (still wondering on his own self-determinant capacities).

CLASSICAL CONDITIONING

The first class of learning is classical (or Pavlovian, associative, or respondent) conditioning or the conditioned reflex. The theory is based on the classical experiments of Pavlov and the Eastern European scientists who have adapted and developed reflex psychology. The essential operation is attaching an already known response to a new stimulus by pairing the two. One, initially neutral, is called the conditioned stimulus (CS); the other, which consistently elicits a response, is the unconditioned stimulus (US). Its response is the unconditioned response (UR).

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As a result of the pairing of CS with US, the previously neutral CS comes to elicit the conditioned response (CR).

The essential requirement for conditioning is that the two stimuli will occur together or with the new stimulus slightly prior to the old one. No learning, or very little learning, occurs if the old stimulus is presented before the new one (like giving a child a reward before he performs a task).

All these phenomena were called 'excitation' by Pavlov (whose theory was based on strictly physiological determinism; he considered himself a physiologist and did not seem to have a good opinion of psychology). He soon discovered that the conditioned reflex could be easily disrupted by the complementary fact of 'inhibition', either external or internal, which led to the 'extinction' of the phenomenon, but could be counteracted after a reasonable pause by a spontaneous 'recovery'.

So inhibition is an active process, produced by experimental extinction which counteracts the effects of excitation in a process where inhibition dissipates more quickly than excitation. Does this mean more freedom?

Pavlov's discoveries were exciting. But the dogs subjected to seemingly innocuous procedures of difficult or prolonged conditioning developed serious signs of emotional disturbance which tended to chronicize. When a dog was confused about whether a signal meant food or no food, it became extremely worried or anxious and this sometimes led to the equivalent of what we would call a nervous breakdown. It was a further exciting discovery. In Pavlov's lab it became a standardized manoeuvre to cause 'experimental neuroses' in dogs at will.

THE EXPERIMENTAL INDUCTION OF NEUROSES

Pavlov's theory on the origin of neuroses, and the possibility of studying conditioning in the lab, started an unusual series of experiments and observations on normal behaviour (its function in the formulation of simple 'habits') and neurotic behaviour in animals and humans. It was based on the assumption that maladaptive behaviour results from deficient conditioned reactions (a failure to acquire adaptive responses as a consequence of defective conditioning powers), lack of opportunity to learn, and a surplus of conditioned reactions – maladaptive anxiety reactions learned under certain conditions and generalized to other situations (Thomson, 1968; Coleman, 1950).

To the same end, Dollard and Miller (1950) used the analogy of a very hungry man confronting food, which he knows is poisoned, to emphasize the conflict between incompatible drives.

Just to mention a few of these experiments: Masserman (1978) conditioned animals to respond to a food signal; then he associated a noxious stimulus with the feeding situation, creating anxiety, phobic reactions, somatic and motor dysfunctions, and repetitive activity, such as pacing back and forth in the experimental cage. Homosexual and autoerotic activity increased even in the presence of receptive females. The dominant animals lost their position and were frequently attacked by other members of the colony. Combs and Snygg (1959) listed the consequences of impossible choices: constant tension, inability to sleep, vague aches and pains, emotional lability, and inability to concentrate. Shapiro (1962) theorized an intrapsychic conflict between various subselves (trying to be the self his mother, father, or other people expect) in a poorly differentiated individual.

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TWO FAMOUS CASES OF CLASSICAL CONDITIONING

The first case was created by Watson (the founder of behaviourism) and presented by Eysenck (1965). Watson maintained it was possible to create experimental phobias simply by using Pavlov's conditioning paradigm—and proved it by using an 11-month-old orphan, Little Albert. He was fond of white rats, used to play with them a lot, and showed no signs of fear. Watson stood behind the boy with a metal bar in one hand and a hammer in the other. Whenever Little Albert reached out for the rats (CS) to play with them, Watson would bang the metal bar with a hammer, thus making a loud noise (US), ensuring that the sight and touch of CS just preceded the onset of US, the noise. After a number of repetitions, Little Albert became afraid of rats: he would whimper and try to crawl away from them in a severe rat phobia which continued unabated during the following days. As in any CR, it showed a generalization gradient: now the boy was afraid not only of rats but also of other furry animals.

Eysenck's purpose was to contrast Little Albert's notorious case of experimental induction of neuroses, followed by experimental extinction, with that of another boy's famous phobia: Little Hans (Freud, 1909, 1955). A famous psychoanalyst of the time had hailed Freud's work as a remarkable achievement wherein the psychoanalytic concepts of phobia formation, the Oedipus complex, ambivalence, castration anxiety, erotic fixation, and repression had been greatly reinforced (Eysenck, 1965).

Two behaviourist psychologists, Wolpe and Rachman (1960), carefully analysed the case and concluded that the incident to which Freud refers as merely the exciting cause of Hans's phobia was in fact the cause of the entire disorder. Hans had actually said 'No, I only got it [the phobia] then. When the horse and the bus fell down it gave me such a fright, really!' and his father: 'All of this was confirmed by my wife … the anxiety broke out immediately after.' They concluded: 'The case does not provide anything resembling direct proof of psychoanalytic theorems … infantile complexes were not revealed behind Hans's phobia: they were merely hypothesized.' But Freud believed that he had obtained in Little Hans a direct confirmation of his theories, for he speaks of 'the infantile complexes that were revealed behind Hans's phobia for horses', while both his neurosis and his recovery could be explained on classical conditioning principles. Unfortunately the actual mechanism that operated could not be identified since the child's father was not concerned with the kind of information that would be of interest. Just as Little Albert had reacted with anxiety not only to the original CS but to other similar stimuli, Little Hans had reacted anxiously to 'horses, horse-drawn buses, vans, horses' blinkers and muzzles … more afraid of large carts, vans or buses than small carts … the less close to phobic stimulus, the less disturbing'.

OPERANT CONDITIONING (OR INSTRUMENTAL LEARNING)

According to Pavlov's theory of conditioning, the essential requirement for learning is mere contiguity or association of CS with US. Salivation is not instrumental in providing a reward; the subject has the response (R) elicited from him.

Vice versa, in operant (or Skinnerian) conditioning the subject is active—the learned conditioned response is instrumental in getting the reward (CR)—according to the main principles of behaviourism and of its founder Watson (one of his famous statements is that he could take almost any infant and through proper training make him into a beggar, a lawyer, or any kind of person he desired), and in line with the recently discovered experimental method which

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makes happen what is needed to be observed, rejects the introspection of mental processes as illegitimate and restricts the observation to the study of mans' or animals' behaviour.

It is called *operant* since it is primarily interested in behaviour which has some effect on the environment, producing a feedback of information which influences future behaviour. The response which produces the reinforcement becomes stronger (i.e. more likely to occur), while that which is not reinforced becomes weaker. The reinforcement is also contingent upon certain responses—those which the subject needs (positive reinforcements) or which allow them to escape from a painful situation (negative reinforcements).

The apparatus for this demonstration is a box with a lever which may operate a reward mechanism (food or water) or turn off a shock given through the grid floor. It is called a Skinner box, as it was first used by Skinner, and it allows techniques for the precise control of reinforcing effects to shape the subject's behaviour. Without reinforcements, an instrumental response gradually extinguishes. Partial or differential reinforcements, which can be arranged according to number, rate, pattern, or time, give higher or lower resistance to extinction and steady rates of responding; for instance, the variable-interval schedules in gambling, or in superstition, are the schedules which make these behaviours so difficult to stop.

Skinner discovered by mere chance that pigeons conditioned in the Skinner box to associate any subject to any positive contemporary response, tend to *freeze* the behaviour they were engaged in at the moment the reinforcement came out, no matter how unusual or tiring that is (e.g. getting rid of fleas under one wing).

CLASSICAL AND OPERANT CONDITIONING IN EVERYDAY LIFE

According to Dollard and Miller (1950), much of what is called unconscious consists not of conscious classical conditioning; instead it seems probable that many of our subjective emotional feelings are classical conditioned responses connected to a forgotten face, voice, or scene. Many of them have been learned before we could talk. Probably most neurotic disorders (anxiety, fears, phobias, obsessive-compulsive habits) are conditioned emotional reactions (introverts condition more easily) (Eysenck, 1965). It is a modestly sophisticated strategy that tries to takes nature's ways into consideration and helps us to choose fast choices in emergencies, by first dividing the world into at least two parts: the good and the bad.

Since Pavlov's time, the Russians have carried on a great deal of experimental work on the conditioning of physiological adjustment (breathing and psychosomatic disorders) since they believe many of them are caused by classical conditioned responses. Classical conditioning also plays a part in how we learn our first metaphors, the words; even if, as far as learning is concerned, operant conditioning plays a greater part.

But classical conditioning has often been considered an inferior form of learning since it makes use of glandular secretions and visceral activities associated with the autonomic system, while operant conditioning deals with conditioned responses involving muscles and bones; that is, voluntary activities versus the largely involuntary activities of classical conditioning. As a matter of fact, in everyday life they complement each other and contribute to the acquisition of different kinds of skills.

Operant conditioning, or instrumental learning, goes on around us all the time. It informs our beliefs, customs, and goals and is especially evident in all socializing processes.

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CONDITIONING AND HYPNOSIS

Up to the decade of the brain (1990s), hundreds of volumes were written on certain phenomena which temporarily change our usual ways of looking at or experiencing internal or external reality. Hotly debated meetings were held to prove somebody's theory was correct despite lacking real scientific proof. Let's list the most popular, beginning from the *siècle des lumières*, the eighteenth century:

- Mesmer's (1734–1815) mesmerism was interpreted in terms of animal magnetism as Elliotson (1791–1868) would do over half a century later, at University College, London. Astonishingly, the Commissioner of the Societé Royale de Médecine (which included as members Franklin, American ambassador at the time; Lavoisier, the chemist; Bailly, the astronomer; Guillotin, the inventor of the homonymous instrument of execution; and other famous scholars) in charge of examining it for Louis XVI (who will be guillotined during the French Revolution) reported in Paris in 1784: 'imagination without magnetism produces convulsions, magnetism without imagination produces nothing, and the fluid is useless, but the violent results observed in the public are caused by: contact (touching), imagination in action and mere imitation'.
- For the Marquis de Puységur (1751–1825), hypnosis was artificial somnambulism controlled by the will power of the hypnotist.
- For José Custódio de Faria (1746–1819), the first to refuse all previous theories, somnambulism was produced by the subject's expectancy and receptivity, possibly increased by passes, magnets, and so on. (Dumas made him one of the main characters in his famous *Le Comte de Monte-Christo*).
- For Braid (1795–1860), braidism or hypnotism *(nervous sleep*, in his opinion), closely related to sleep, was brought about by fatigue of the eye muscles caused by fixation; later he called it *monoideism* since it was the result of concentration on a single idea. He was the first to realize that there was no direct physiological link between the hypnotist and the subject.
- For Charcot (1825–1893), director of the Salpêtrière, one of his students, Babinski (1857–1932), and later Pallier (1892) and his followers, hypnosis was an experimental neurosis (different degrees *de la meme pâte*, i.e. a make-believe), which Babinski called *pithiatisme*.
- For Bernheim (1837–1919) and Liébeault (1923–1904) the *persona* was the only active part in the process with suggestion (i.e. imagination is the main factor).
- For Coué (1857–1926) hypnosis was self-suggestion caused by imagination.
- For Janet (1859–1947), one of Charcot's students and his successor as director of the psychological lab at the Salpêtrière, hypnosis was a secondary dissociated consciousness.
- For Sarbin and Coe (1972), hypnosis was simply a role-taking behaviour ('a person in hypnosis acts as he believes a hypnotized person should act'), a theory no longer sustainable after the Canadian experiments of the 1990s.
- Some atavistic biologists such as Granone (1983) and Perussia (2011) hypothesized that hypnotic phenomena, such as immobility (death faking), regression, self-hypnosis, non-verbal communications, post-hypnotic suggestions, hallucinations, and so on are archaic atavistic defence behaviours typical of weaker philogenetic species.

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- For the East European scientists who adopted and developed Pavlov's reflex psychology, hypnosis was considered to be 'a physiological state produced by a life-time of conditioning, in the course of which certain words tend to act like Pavlov's bell in causing effects due to long association'.

Today, hypnosis is commonly accepted as a learning technique and, as such, an example of classical conditioning, called into play as a form of hypnotic trance, of negligence to some stimuli which give strength to imaging and to its consequent ideoplastic force.

THE STATE-DEPENDENT THEORY OF MIND AND BODY

Pavlov, Skinner, and all the pioneers in the first half of the twentieth century who started—at first by mere chance, then more deeply—their research work in animal/human conditioning/learning processes, were not aware of the role that stress hormones of parasynaptic cellular modulation play in the learned association between stimulus and response. Pavlov's distrust of psychology oversimplified his basic conditioning experiment as a model for learning and memory. But humans do not always react in a rigid stimulus-response manner to behavioural conditioning. It is a common belief that patients may lose all motor reflexes, all ability to communicate with the outside world, and all sense of pain, and be able to hear and remember significant events and conversational remarks by significant medical personnel during surgical operations at a deep level of unconscious thought, which puts them at greater risk with negative consequences on recovery rates. Meaningful sounds, meaningful silence, meaningful conversation are all registered and may have a profound and lasting influence on the patient. The last resource of the human organism in maintaining contact with their external environment seems to rest with the sense of hearing.

A severely depressed brain can quickly acquire Pavlovian defensive conditioning. Thus far, there is very little recognition of this evidence. Rossi and Cheek (1988), during their research on the unconscious perception of meaningful sounds during surgical anaesthesia, reached the belief that post-traumatic stress disorder is essentially a form of state-dependent memory, learning, and behaviour (SDMLB) and the classical paradigms of Pavlovian and Skinnerian conditioning are actually varieties of SDMLB—which reminds us that biological systems, being highly dynamic, are non-linear.

In the last few decades, SDMLB has been investigated as the broader and more generic form of learning that takes place in all complex organisms with a cerebral cortex, a limbic-hypotalamic system, and closely related systems. Epinephrine, an information substance utilized in parasynaptic cellular modulation and which is released during stress—with a highly significant role in the state-dependent, state-bound phenomena of human behaviour—has been demonstrated to be a facilitator of memory and learning under general anaesthesia. Beta-endorphin, adrenocorticotropic hormone, and a variety of endocrinal hormones and their peptide analogues, released together, also have been found to encode and modulate state-dependent memory learning and behaviour processes encoded in the limbic-hypotalamic and closely related systems. They are the major information transducers between mind and body. An important example is the post-traumatic stress disorders that, by stimulating excessive arousal, can lead to varying clinical symptomatology.

Van der Kolk (1989) sees state-dependent memory as the basic process of:

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1. Freud's traumatic neurosis as the organic basis of psychopathology; the history of psychoanalysis as a prolonged clinical investigation of how dissociated and state-dependent memories remain active at unconscious levels, giving rise to complexes;
2. Jung's source of psychological and psychosomatic problems.

CONTEXT AND STATE–PLACE–TIME DEPENDENT MEMORY

Memory has two largely separated working models: the short term and the long term; of two types: semantic and episodic; and with different levels of strength. Semantic memory contains information about our organized knowledge of the world (Hayes, 1998). Episodic memory, which records life as it happens, can be context dependent (related to external autobiographical memory) and state dependent (internal). Each process of storing the memory of an event implies the storing of its context (i.e. a cue to the associated memories, never lost even if inaccessible.) It can be determined by stimuli such as places, smells, music, and a variety of sensorial cues. Context dependency was proved by Baddeley's scuba divers who memorized lists of words underwater or on land and recalled them better when tested in the environment (context) in which they had learnt them (Godden & Baddeley, 1975).

STATE-DEPENDENT MEMORY

State-dependent memory is the increment in memory that occurs when a person's physiological conditions or emotional state is the same during the test as it was during encoding. Baddeley's heavy drinkers could remember where they had hidden money only when returned to the drunken state in which they had hidden it (Baddelely, 2000). Facco (2012) produced a more dramatic example of state/place-dependent recall on reporting on a case (see Holden and MacHovec, 1993) regarding a man who had previously had a very pleasant near-death experience during an anaphylactic shock yielded by iodine contrast medium administration for a radiological investigation. The patient had been submitted to hypnosis with the direct suggestion of going back to the moment of near-death experience: when he recalled it, he underwent a sudden fall of arterial blood pressure with an increase in his heart rate of up to 190 beats/min, which reversed after dehypnotization.

This paper began with a quotation from Proust's *À la recherche du temps perdu* in the original French, as a key example of the power of context-dependent memory that no intellectual effort would have reached, based on taste and smell alone:

> as soon as he had recognized the taste of the piece of madeleine soaked in her decoction of lime blossom which his aunt used to give him, immediately ... *a vast memory gap could be re-created by using the senses as a bridge of union between body and mind, of recollection between the present and the past. (Proust, 1992; author's emphasis)*

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STATE-DEPENDENT MEMORY IS NO NOVELTY

Mankind used state-dependent memory long before it was theorized. If it is at the base of all rituals—the religious and the civil ones, in war, in peace, in games, to remind and recreate state-dependent memories, learning and behaviour—it is because it has always proved its efficacy. It is a way of physiologically going back to a space/time/mind/behaviour, clue directed for a full immersion into a profound emotional environment and recreated for the present; it might even be the mental 'safe comfortable place' a patient may be invited to imagine during a therapeutic session.

Endogenous generated behavioural states causally influence regulatory physiology. All living organisms exhibit cyclic patterns of activity/inactivity (just as mammals do with the ultradian sleep cycle) (Rossi & Cheek, 1988).

The following are everyday instances of spontaneous (Skinnerian) conditioning or instrumental learning and state-dependent memory (Morgan & King, 1956). Any situation regularly associated with a goal becomes a secondary goal and, when achieved, gives pleasure. Thus we like to be around people with whom we have shared satisfying experiences. We like to make money because it satisfies other needs. We like to go back to places where we formerly had a good time. We derive pleasures from those situations which were associated with the satisfaction of goals.

In everyday life we understand that there is a 'state-dependent remembering'. If, for example, we arrive in the lounge only to discover that we have forgotten whatever it was that we have come in from the kitchen to find, we instinctively know we'll recall whatever it was far better if we return to the kitchen and stand in the spot where we had our original thought.

Today the idea of state-dependency is becoming something of a cult: it can be found in state-dependent memory (see *Lancet*, 1991), memory deficit (Gianlorenço et al., 2011), ethanol abuse (Rezayof et al., 2008, 2009), state-dependent mood retrieval (Kenealy, 1997), state-dependent spike timing (Wierzynski et al., 2009), state-dependent cognitive processes (Berridge & Waterhouse, 2003), state-dependent valuation learning in fish (Aw et al., 2009), state-dependent memory produced by aerobic exercise (Miles & Hardman, 1998), state-dependent retrieval hypothesis of drug conditioning and sensitization (Braga et al., 2009), state-dependent firing neurons (Jo et al., 2005), and cue- and dopamine-dependent fear conditioning (Fadok et al., 2009).

FREE WILL

Free will is an everlasting ambiguous dream. Can conditioning and SDMLB influence it? Apparently, by tying behavior to further links it can only contribute to hindering it. For personal use, I invented 'the law of imperfection', because I have too often seen it at work. Nothing is perfect in our world: the unexpected, which breaks traditional rules and solutions, compels us to use those tiny, freelance rebel specks in us and make of them the freedom flag in the revolt against a too-conditioned world.

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COMMUNICATION AND HYPNOSIS IN HIGH-TECH MEDICINE: A CONVERSATION BETWEEN CHRISTEL J. BEJENKE AND MARK P. JENSEN

CHRISTEL J. BEJENKE, MD

MARK P. JENSEN, PHD

ABSTRACT

This article summarizes the key points of a conversation between Christel J. Bejenke and Mark P. Jensen, during which Dr Bejenke discussed her views of hypnosis and its application in medical settings. She notes that under conditions of significant stress, such as is the case in most medical settings, people become exquisitely suggestible. As a result, patients are *vulnerable to negative suggestions* which—even though entirely unintended—are unfortunately ubiquitous in a medical environment. It is therefore important that practitioners be aware of the suggestive potential of their communications and avoid comments, casual remarks, or admonitions that could function as negative suggestions. Instead, practitioners can utilize their patients' suggestibility to achieve beneficial effects by including *positive suggestions* within their *usual communications*. Dr Bejenke also discusses *formal hypnosis* and provides multiple examples of how various hypnotic modalities and approaches can be used in medical practice. Because suggestions are integral to medical communication and, in fact, are unavoidable—even though physicians are unaware of it—a simple awareness of hypnotic concepts and principles can be useful to physicians. Such awareness can improve the efficacy and efficiency of medical communication and Dr Bejenke recommends that the basics of hypnotic concepts be included in medical training.

Key words: medical hypnosis, imagery, awake-alert hypnosis, cancer, paediatrics, communication

INTRODUCTION

Dr Christel Bejenke is an anaesthesiologist who learned entirely by accident that her style of communication with patients—which she had used for as long as she has practised medicine—is 'hypnotic'. This was brought to her attention late one evening over 30 years ago. As she completed her pre-operative visit with a patient who happened to be a psychiatrist and who had requested that she provide his anaesthesia for an upcoming operation, he remarked in passing, 'And you know, of course, that you are hypnotizing your patients.' Dr Bejenke was horrified because at that time she viewed hypnosis as charlatanism—unethical and dangerous. She believed that hypnosis involved taking control over subjects and taking advantage of their dependency and gullibility. In contrast, she had always striven to empower her patients and to reduce their dependence by showing them how to take charge of their own medical experience, to be in control of fear, pain, and suffering, to speed recovery and enhance healing.

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She subsequently decided to learn enough about hypnosis in order to eliminate all 'hypnotic' components from her interactions and thus protect her patients from unintended dangers. Unfortunately, her initial search for more information about hypnosis only confirmed her concerns and suspicions that hypnosis was 'indeed unethical and dangerous'. For example, she had signed up for a course given by a physician attorney, assuming that his degrees guaranteed (stood for) ethical principles. Instead, she discovered that he put streetwalkers into trance to entertain students on his course with salacious descriptions of the prostitutes' encounters.

She eventually attended a brief course on hypnosis for pain control at UCLA in 1978, taught by Dr Joseph Barber, where she was exposed to ethical applications of hypnosis for the first time. She also discovered to her amazement that her psychiatrist patient had been correct: what Dr Barber described as 'hypnosis' was how she had always communicated with her patients. What she considered 'everyday, normal, reassuring communication', Dr Barber called 'positive suggestions'; and he identified the 'anaesthesia' she had delivered to a paediatric patient as 'advanced hypnosis'—in fact, 'hypno-anaesthesia'. She further learned that hypnosis could effectively facilitate many of her goals, among them pain control and patient empowerment.

She began attending additional hypnosis courses and conferences. But, to her disappointment, the techniques did not lend themselves to the conditions and hectic pace of biomedical settings where the surroundings are often noisy and where there are neither couches, pleasant lighting, nor the type of privacy necessary for the usual techniques. In addition, in biomedical practice, patients consult physicians to have their medical needs taken care of in the available 5 to 20 minutes; they certainly do not expect to be 'hypnotized'.

Therefore, Dr Bejenke developed hypnotic and related techniques that do lend themselves to the wide range and hectic pace of biomedical practices (Bejenke, 1990, 1993 1995, 2000a, 2000b, 2000c, 2001, 2008, 2011a, 2011b) and which she herself has used with acute and chronic illnesses (e.g. burns, diabetes, renal failure, cardiovascular disease, acute and chronic pain, transplants, cancer, psycho-neuro-immunologic approaches); in obstetrics (e.g. hyperemesis—the pernicious form of morning sickness, 'at risk' pregnancies, birthing, C-sections, lactation); in emergency rooms and ambulances; during resuscitations (e.g. cardio-pulmonary arrest, status asthmaticus, accidents); for operations and other invasive medical procedures (e.g. radiologic, cardiologic, gastroenterological); in intensive care units (ICUs) (including mechanically ventilated patients); and with unconscious or comatose patients (of various causes, during general anaesthesia/intra-operative awareness). Hypnosis is of particular benefit in paediatrics, radiation treatments for cancer, and diagnostic computed tomography (CT) or magnetic resonance imaging (MRI) scans. Such patients must be completely immobile but, for logistical reasons, general anaesthesia is difficult and can be risky, as is heavy sedation. Hypnosis carries none of these risks and can be used in the hospital or office.

Dr Bejenke's methods of *suggestive communication*, *hypno-sedation*, and *informal hypnosis* consist of a continuous interweaving of non-hypnotic, hypnoidal, hypnotic, and related modalities. They require no additional time beyond that which physicians already spend with patients (Bejenke, 2011b). Even her techniques for formal and alert hypnosis do not require quiet surroundings, recliners, or complete privacy.

Dr Bejenke has also developed specific concepts and scripts for avoidance of negative suggestions; for their substitution by neutral statements, or by positive, reassuring suggestions; as well as for 'detoxifying' and reframing negative suggestions that patients may have already

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received from others; for relief of a variety of somatic symptoms; for coping with chronic illness; to augment resilience; and to prepare patients for medical procedures. In contrast to most standard hypnotic techniques, which are usually impractical or improper for somatic medical practices, her techniques and approaches are useful for fast-paced, busy, even hectic medical situations, and require little or no training. She has used these approaches since the late 1970s with approximately 20,000 patients.

As a pioneer in the development and use of these strategies and techniques for medical settings, she quickly became a valued lecturer and teacher, both nationally and internationally. Throughout her influential career, Dr Bejenke has sought to de-mystify and de-mythologize 'hypnosis' for physicians.

Mark Jensen: *How do you view hypnosis?*

Christel Bejenke: First, I don't like the word 'hypnosis'. It is a misnomer, as it implies sleep. Even though it has been known for decades that the hypnotic state is not a sleep state, the label hypnosis has unfortunately stuck. I prefer the term 'trance'.

TRANCE IS A 'THIRD STATE'

Western cultures traditionally recognize two states of consciousness: the 'awake' state and the 'sleep' state. I view the 'trance state' (along with imagery, visualization, meditation, prayer, reverie, or daydreaming) as a distinct third state, which is as different from the awake state and the sleep state as these two states are different from each other. Each of these three states has its distinct physiological and neurobiological properties.

TRANCE IS A NATURAL STATE AND HYPNOTIC RITUALS ARE UNNECESSARY

All three states share at least one common characteristic: people enter and leave each of them *naturally*. (For example, children move in and out of trance naturally and spontaneously, but are often chided for 'daydreaming' and the like. Therefore, many 'unlearn' their innate skill and lose the ability to utilize natural trance states for their benefits.) But even though trance is experienced naturally, it is usually defined as an 'altered state'. And because trance is a natural state, a formal hypnotic induction is usually not necessary, nor is a 'hypnotist' (a term that makes me cringe). Necessary, however, are the *right conditions* in order for trance to occur; and I believe that their lack may have caused many of my patients to be classified as 'unhypnotizable' and to even become convinced of it themselves. My usual response to 'I tried to be hypnotized 15 or 20 times but it never worked' is 'Congratulations!' They may not have allowed themselves to enter a trance on those occasions because something was 'not right for them': the purpose, the timing or something else. Perhaps the hypnotist was seeking to gratify his or her own need for power.

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HYPNOTIC SUSCEPTIBILITY OR 'HYPNOTIZABILITY'

Although hypnotizability may be of academic interest in laboratory or other hypnosis research, it has no relevance to the day-to-day clinical situation. When trance is appropriate for a patient at this particular time, it will occur. If not, there is no reason to pursue it. After all, in somatic medical practice, time is so precious a commodity that none may be wasted and I have not tested a single patient for hypnotizability.

On the contrary, I have found over and over that even those patients who are convinced that they are unhypnotizable can enter deep trances within seconds. One, a university professor of psychology who even taught hypnosis, told me dejectedly that he had been 'tested repeatedly as unhypnotizable' for 40 years and that he had been unsuccessful in all attempts at being hypnotized. Professor K had requested me to be his anaesthesiologist for a serious and complicated cancer operation. He had been so terrified that he and his wife had not slept for days—despite taking sedatives and sleeping pills. However, during the first few minutes of our pre-anaesthesia visit, during which I used my usual suggestive communication, he spontaneously entered a profound trance. Thereafter, I continued his pre-anaesthesia preparation in trance. Afterwards he 'felt wonderful' and even had complete amnesia for the entire one-hour session. (The important items, specifically the risks, were, of course, re-discussed with him in full consciousness and remembered by him.) Following that preparation he slept soundly every night until the operation—without any medications whatsoever! Another benefit of his preparation was that he was so calm that he required no pre-operative sedation and even very little anaesthesia. Therefore, he was fully alert immediately after the operation. (Then, patients would usually be asleep for 10 to 12 hours or longer, and remain sedated for days.) He also experienced practically no pain after this long and complicated operation and had a more rapid recovery than expected.

PATIENT MOTIVATION IS NOT USUALLY A LIMITING FACTOR IN MEDICAL SETTINGS

I believe that the stress of many biomedical situations actually engenders *high motivation* in our patients. Who would not prefer to do well and be comfortable in all respects? In fact, it may well be easier for us in somatic medicine to achieve hypnosis than for our colleagues in psychological specialties. For *distress promotes natural trance states* and the majority of our patients experience significant stress, fear, and/or pain when we encounter them. Thus, we can simply *utilize* our patients' distress to their benefit.

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IN MEDICAL PRACTICE HYPNOSIS IS A TOOL, NOT A THERAPY

I do not consider myself a 'hypnotherapist', which may be defined as a professional who uses hypnosis in the practice of psychological or psychiatric therapy. My patients do not consult me for 'talk-therapy' but for problems related to their somatic conditions—even those patients who are specifically referred to me for hypnosis. As a biomedical physician, I provide medical care, information, instructions, medical counselling, and advice; hypnosis is only one of many tools in my professional armamentarium. Hypnosis does not replace standard medical treatment, but can facilitate, augment, and complement our work as an effective adjuvant. Hypnosis is neither therapy, nor a psychological approach to somatic illness; nor is it a placebo or alternative medicine (see also Kihlstrom, 2004).

HIGH SUGGESTIBILITY OF MEDICAL PATIENTS IS A LIABILITY, BUT ALSO AN OPPORTUNITY

As I observed, patients are exquisitely suggestible under conditions of stress and anxiety. They may enter spontaneous trance states and even exhibit so-called 'trance-phenomena' (signs characteristic of a hypnotic state, like focused attention, amnesia, 'regression' to a child-like level of functioning, which result in child-like responses, e.g. being literal and concrete, and suspension of critical judgement (Bejenke, 1996b, 2001, 2008)). Cheek pointed out that 'surgical patients behave as if hypnotized' (Cheek, 1962). Under these conditions, statements by caregivers can have the effect of compelling hypnotic suggestions. In fact, such 'suggestions' can be as powerful as suggestions given during formally induced hypnotic states. Some highly stressed patients may even enter into so-called 'negative trance states' spontaneously (e.g. anticipatory nausea and vomiting during a course of chemotherapy, or the behaviour of severely injured patients in the emergency room). While high suggestibility makes patients vulnerable, it can also be utilized for their benefit. I'll talk more about this later. It persists from the beginning of a medical encounter to complete recovery.

MJ: What kinds of problems do you use hypnosis for?

CB: First, I should clarify that I use a number of hypnotic modalities. For example, I use 'waking suggestions' (or 'suggestive communication' as I often call it) with *all* patients (Bejenke, 2011b), which often transitions spontaneously into informal hypnosis. In addition, I have used formal hypnosis with several thousand patients.

INVASIVE OR OTHER PROCEDURES

Originally, I used waking suggestions (suggestive communication) and informal hypnosis to prepare my anaesthesia patients for operations and interventions (e.g. cardiovascular, neurosurgical, paediatric, orthopaedic, gynaecological operations (Bejenke, 1993,1996b, 2000c, 2001, 2004, 2008, 2011a; see also Egbert et al., 1964), deliveries and C-sections; for invasive radiologic, cardiologic, or endoscopic procedures). Since about 1980, I added

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formal hypnosis not only for the mentioned interventions, but also to help patients tolerate serious medical illnesses better (e.g. cancer, renal failure, cardiovascular disease, hyperemesis, diabetes, 'at risk' pregnancies) as well as taxing treatments (e.g. chemotherapy, radiation, transplants) and for various other problems, such as helping new mothers with lactation (nursing their babies).

CHILDREN

Hypnosis is of particular benefit in emergencies, for radiation treatments for cancer, and diagnostic CTs or MRIs. The latter three require complete immobility but, for logistical reasons, general anaesthesia or heavy sedation can be difficult and risky. Hypnosis carries none of these risks. I kept an unprepared 5-year-old boy, to whom I had no physical access, completely still in the tunnel of a CT-scanner for hours (CT scans took a long time then!)—thanks to hypnosis. But when the procedure was finally completed, the radiologist said to me, 'You shouldn't charge for this—all you did was talk.' (This had been more strenuous for me than general anaesthesia would have been, which would have interfered with the radiologist's needs.)

BURNS

Hypnosis is useful with burn patients in acute and chronic situations (see also Ewin, 1983; Moore & Lawrence, 1983; Patterson et al., 1987). I used it, for example, while rescuing severely burned firefighters on a burning mountain during one of Santa Barbara's wild fires, and for the many follow-up operations.

ACUTE AND CHRONIC PAIN

Whenever possible, I use hypnosis *pre-emptively*. I consider *prevention* the most effective treatment of pain and am convinced that many chronic pain conditions could be prevented by pre-emption (possibly even phantom limb pain). Unfortunately this is not always possible, but even when possible, it is hardly ever done (e.g. pre-operatively). Thousands of my patients had either no post-operative pain—even after major operations which are known to cause significant post-operative pain—or they required very small amounts of pain medications for brief periods of time. In addition, *hypnosis augments the effect of pain medications*. Most importantly, *hypnosis is the only pain treatment without concomitant negative side effects or complications*. In fact, hypnosis and related modalities avoid the common negative side effects of pain medications such as nausea, vomiting, constipation, sedation, obtundation, and respiratory depression. This lack of negative side effects combined with the beneficial ones of hypnosis, like increased relaxation and sense of control (see also Jensen et al., 2006), are additional reasons for a shortened hospital stay and cost-savings. An example is a patient's note: 'I spent only one night in the hospital. Got kicked out for not agreeing to take their pain pills. I truly didn't need them.'

UNCONSCIOUS OR COMATOSE PATIENTS

I use hypnotic language with unconscious patients and also while I *resuscitate* patients from cardiac arrests, status asthmaticus, or accidents. For example, during resuscitations, I explain to unconscious patients what is happening, what I am doing for them and why; while I am ventilating or intubating them, I describe how it feels and how they can help make it easier for both of us. Just before defibrillation, I explain what it will feel like and that it takes only a fraction of a second. I make no token statements

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like 'You're going to be OK', but rather *tell them what is true* (e.g. 'Your lungs are doing a good job ... oxygen is again circulating well in your body ... we are helping your heart become stronger'). Some patients who survived commented afterwards how much less frightening the experience of resuscitation had become once I spoke to them and they understood what was happening, felt taken care of, and realized that they might not die.

Hypnotic language and positive suggestions are helpful in the intensive care unit, even with profoundly sedated, comatose, mechanically ventilated patients. Such patients usually require heavy sedation and paralysis, which often leads to difficulties in 'weaning' (from the machines). However, those patients who can be prepared hypnotically in advance (which is unfortunately rarely possible) or with whom suggestions are used while they are being ventilated, often require less sedation and/or paralysis (see also Varga et al., 2007).

DURING GENERAL ANAESTHESIA

I have routinely used 'hypnotic language' and positive suggestions while 'putting patients to sleep', inserting the endotracheal and other tubes, during operations (long before intra-operative awareness became recognized in anaesthesiology). From time to time I give patients 'status reports' (e.g. 'Everything is going well. Dr X just did xyz ... and is very pleased'). If things are not well, or if the surgeon just exclaimed, 'Oh no, she's full of cancer!' or if the pathologist reported loudly an unexpected cancer or a poor prognosis over the intercom, I might say, 'Well, now that we know what the problem is, we can do something about it.' I do not make perfunctory statements like, 'You're going to be all right' or imply unrealistic promises, but say *only what is true*; and something positive can usually be found (e.g. 'Your heart is strong, your blood pressure is perfect, your lungs are working well ... and you are doing well ... Pretty soon the surgeons will complete their job [*not* 'finish'!] ... And I wonder how surprised you will be when you wake up in the recovery room ... how much *more comfortable* you can feel than you might have thought ... and how easy it will be for you to heal and recover ... and how strong you will feel ... and what good care you will take of yourself'). I repeat suggestions I have given pre-operatively or during induction of anaesthesia (e.g. 'When you awaken after your operation, you can feel refreshed and clear-headed ... like from a really good night's sleep ... so well rested ... feeling comfortable'). I continue remarks using their *imagery* and also communicate non-verbally by touch (e.g. repositioning the arms, head, or other accessible body parts). An additional reason for speaking to patients while under general anaesthesia is the possibility of *intra-operative awareness*, an experience so traumatic that it may lead to post-traumatic stress disorder (Macleod & Maycock, 1992). Even though there have been numerous reports about intra-operative awareness since the late 1950s and 1960s (e.g. Cheek, 1959, 1964; Levinson, 1965; Blacher, 1984), it was not fully recognized in the anaesthesia literature until the 1990s and later (e.g. Moerman et al., 1993; Sebel et al., 2004; for a review of this topic see also Ghoneim et al., 2009; for Dr Bejenke's approaches regarding intra-operative awareness, see Bejenke, 1996a, 2011a).

Although it has become more common in recent years for clinicians and family members to speak to comatose patients, speaking to patients under general anaesthesia is still anomalous and has earned me much ridicule from my surgical colleagues.

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OTHER MEDICAL CONDITIONS

Many conditions for which I use hypnosis have not been addressed in medical or hypnosis literature. One example is a noteworthy effect after axillary node dissection for cancer where lymphatic drainage usually persists for five to ten days and reforming seromas can require repeat aspirations for weeks. However, in those patients to whom I had given suggestions for early cessation of lymphatic drainage, drains could be removed within two days and these patients required no further aspirations.

Like many other benefits of suggestions or hypnosis, the mechanism of this effect cannot yet be readily explained medically. But because the potential benefits are risk-free and require no time, physicians could use suggestions for a number of medical conditions—even before there is scientific proof.

MJ: What are the key elements of effective hypnosis?

CB: Of equal importance are: (1) listening to and 'hearing', (2) the right conditions, trust, complete truthfulness, and honesty, (3) suggestions, (4) resistance, (5) empowerment, (6) empathy, (7) reverence for the patient's autonomy, creativity, and inner resources (Bejenke 1996b), (8) relationship, and (9) creativity and intuition.

LISTENING AND 'HEARING'

Analogous to 'reading between the lines', I 'listen between the words' to get a sense of the patient's fears, beliefs, and needs; their perceptions of their condition and planned intervention; and their expectations and goals. For patients tell us exactly what they need—we must only *hear* it. Then, every word I say—even while obtaining the medical history—is determined by, structured, and tailored for *this* patient's situation.

THE RIGHT CONDITIONS, TRUST, COMPLETE TRUTHFULNESS, AND HONESTY

In order for hypnosis to be effective, there has to be a *need* (my patients' needs and distress are often overwhelming), trust in the provider's scrupulous honesty, and the singular goal to benefit the patient. The patient senses this—verbal assertions are unnecessary and can be counterproductive.

In their effort to be truthful, physicians sometimes inadvertently deprive patients of hope, for example, via statistics. Instead, statistics can be utilized to provide hope (e.g. that 'half the patients do better than average'). Hope improves overall quality of life and possibly generates a better response to treatment.

However, 'positive reassuring suggestions' and 'communicating hope' *never* mean deception, exaggerated claims, unrealistic promises, minimizing risks, taking advantage of the patient's gullibility, or manipulating the patient into compliance. Instead, *medical facts and risks must be presented accurately*, *thoroughly, and placed in proper perspective*. However, *how* we communicate can support hope and the will to recover. Many patients have told me, 'No one ever told me so much about the risks, and I have never been less afraid.' This reflects that it is not *what* is said, but more importantly *how* it is said.

SUGGESTIONS—DEFINITION AND CONCEPTS

In the field of hypnosis, there are certain definitions for the term 'suggestion'. For my own work, and the approaches and techniques I teach, my concept of suggestion is akin to the common, vernacular English usage: *a proposal to consider a new or different view,*

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idea, or possibility; to put forward for consideration; to hint, imply, or intimate. I have no expectation of 'compliance' with any suggestion, nor is the patient 'compelled' to carry it out (as per the concept of 'post-hypnotic suggestion'). Rather, the patient is simply given an opportunity to entertain a different, more beneficial view or perspective; to reinterpret sensations or experiences positively—and most patients will choose that option. The better we understand the medical facts, the more powerful and credible our suggestions will be.

RESISTANCE

Resistance—a topic of many hypnosis courses—has not been an issue in my practice. If it were to occur, I would respect it and assume that there is a good (i.e. protective) reason for it. But because I am dealing with somatic rather than psychological issues, I would not 'explore the reasons' for resistance, for I certainly have no interest in convincing a patient to go into trance or to accept hypnosis. But frankly, I have yet to encounter resistance with patients.

EMPOWERMENT

Unfortunately, we physicians are often expert at disempowering patients. Yet, it is the sense of *powerlessness* and *loss of control* that creates fear, sometimes even terror. Patient empowerment may be the most important goal of my work: via hypnotic methods I can demonstrate to patients that they can have control over things over which they had no idea they could possibly have control (e.g. pain, fear, nausea, bleeding, bladder and bowel function). Using suggestive communication in the *patient's own language* with *metaphors from the patient's realm of experience*, I provide the factual *information* appropriate for their situation. Next, I give concrete *instructions* on what they can do themselves to contribute to the best possible outcome. These can become tools that enable patients to discover a new or different perspective on their condition and often negative expectations. Most importantly, I give patients *choices*—however minute they might be (Bejenke, 1996b, 2000b, 2011b).

Information, instructions, and choices enhance the patient's sense of competence, self-mastery, independence, dignity, and autonomy, while they also increase coping skills, sense of control, and hope. Suggestions augment these benefits further. As a result, patients no longer perceive themselves as 'victims' of an illness or condition, and as powerless, passive recipients of incomprehensibly complex medical technology. Rather, they can view themselves as active participants in their treatment and healing process; and as equal, co-responsible partners with their treatment team. This shift benefits not only the patient but also the medical care providers, as it results in reduced fear, increased cooperation, and overall satisfaction—and is cost-saving (see below). Self-hypnosis is particularly empowering and can be taught in minutes. A young woman whose breast cancer prognosis was particularly poor and who was undergoing taxing chemotherapy expressed her sense of empowerment thus: 'In such a quiet way I feel so powerful.'

EMPATHY

The ability to sense and experience our patients' distress, confusion, fear, and suffering is not taught in medical training, even though most of us enter medicine with the desire to decrease our fellow humans' suffering. Empathy is directly communicated by how we

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listen and *act*. Patients *sense* it; talking about it serves no purpose. There is an ancient German saying, 'Kinder und Narren sagen die Wahrheit' (Children and fools speak the truth). When patients emerge from anaesthesia they are in such a state (in fact Sodium Pentothal used to be called a 'truth serum'). For example: my patient is still on the operating table; I have just removed the tube from their windpipe and my face is directly above theirs. As they open their eyes, they make direct eye contact with me. Often their first words are something like, 'Thank you for being there to protect me … I felt so safe' or 'I could feel your love.' I am always a little embarrassed by this and hope that nobody else in the operating room heard it. But they seem to have sensed my intention.

Reverence for the patient's autonomy, creativity, and inner resources requires no explanation.

All the above factors determine the **relationship** between the care provider and patient, between 'healer' and 'healee'.

Creativity and intuition are more effective than 'techniques'.

These are the essential elements of effective hypnosis and the ingredients for the 'success' of hypnotic approaches. Notice that elaborate hypnotic techniques are not on the list (although some techniques can be helpful at times), nor is a high level of hypnotizability.

MJ: You said negative suggestions are ubiquitous in the medical setting. Can you give some examples?

CB: Physicians are usually unaware that some of their seemingly innocent statements, innocuous remarks, or well-intended admonitions, even information and instructions, can function as negative suggestions, even though they are provided with the very best intentions. The following examples are standard language not only in the United States, but also in the many European and American countries in which I have taught (Bejenke 1996b).

1. 'Just *try* to relax' only confirms to the patient that he or she cannot relax. It will further increase the patient's sense of helplessness, while the word 'try' implies failure. On the other hand, showing the patient *how* to relax *is* helpful. Among the many strategies that can be effective are (1) distracting the patient, (2) explaining why the patient can feel safe, and (3) giving simple relaxation exercises.
2. The admonition 'don't worry' is neither calming nor helpful, but achieves the opposite. The patient registers 'worry' and the negation ('don't') actually elicits the opposite effect. Just think what happens when you are told, 'Don't think of a pink elephant'? Here, instead of admonishing the patient not to worry, one should give reasons *why the patient can feel safe*, without using the word 'worry'.
3. 'Do you have pain?', 'Call me when you start hurting', 'How bad is your pain?', and 'Did the pain medicine help?' are other negative suggestions that surgical patients constantly receive. To the patient this translates into: 'There will be pain. After all, they are the experts, *they know*. It is only a matter of when and how bad my pain will be.' Instead, one can say, 'Are you comfortable? There are many ways in which I can make

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you more comfortable: would you like …, or … or …?' All of these words have either positive or neutral connotations.

4. 'Let's give this a try,' 'Let's see if this will work,' and 'That might help' all *imply likely failure* (of a medication or treatment). Instead one could say: 'This medicine (treatment) has a number of beneficial effects such as … When I see you next time, you can tell me how well it worked for you.'
5. In every country in which I have taught, anaesthesiologists routinely tell their patients something like, 'I will put you to sleep' ('sleep' is often a euphemism for death, and it may invoke 'putting a dog to sleep' or 'Grandpa went to sleep' and never woke up again) or 'You'll go under …' (which can also be symbolic for death—the dead are put 'six feet under' and when you 'go under the water' you drown). It is much more helpful to say factually, 'An anaesthesiologist, a specialist, will administer your anaesthetic. *Anaesthesia has to do with comfort and safety*. And the anaesthesiologist will watch you very closely to make sure that you are safe … while you are very relaxed.'
6. Surgeons, anaesthesiologists, and nurses tell patients who are just waking up after an operation, 'It's all over' or 'You're finished,' both of which could be understood to mean 'You're dead or dying.' An example, recounted by an anaesthesiologist during one of my seminars in Sweden, had been inexplicable to her.

   She had administered spinal anaesthesia for an emergency repair of an incarcerated hernia to a 'high risk' 90-year-old man who had been informed of the risk of dying and was very fearful of not surviving the operation. However, during the operation he was very stable, completely comfortable, dozed, and was not even aware that the operation was under way. In her effort to reassure and cheer him, the anaesthesiologist said at the end of the operation, 'It's all over, you're finished,' upon which he stared at her with extreme fright, developed severe cardiac dysrhythmias, which often precede a heart attack, required aggressive treatment and ICU admission. The anaesthesiologist could not understand why such good news could have such a devastating effect. Now she realized that for a patient who thought he might die during his operation, and is told 'It's all over,' is enough to give him a heart attack!

   What could the anaesthesiologist have said instead? 'Hello (cheerfully)! Good morning (afternoon/evening). Did you have a good rest? I have good news for you: Dr Smith just completed your operation and he is very pleased. You have done very well and you are safe. Everything is taken care of. You are probably hungry [this returns the patient's preoccupation to normal, ordinary, healthy thinking] and are already thinking of something delicious to eat. Let me see what the cooks have prepared for you, so you can enjoy something delicious—just as soon as your surgeon says it is OK' ('as soon as your surgeon says it is OK' is critical; see Bejenke, 1993).
7. The nurse places the emesis basin next to the patient's face, and says: 'I'll put this right here by your face, so you have it when you need it …'

Once we pay attention, we are amazed at how replete medical communications often are with negativity and negative suggestions. While visiting a patient who had been very afraid prior to her operation, but who had actually done incredibly well, her internist said laughing: 'If anything is going to go wrong with anyone, it will be with you!' He was trying to be light-hearted, it was not meant to be mean-spirited at all,

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but it severely frightened the patient. Such a comment can actually lead to complications because of the patient's highly suggestible state.

The critical point of these examples is that medical professionals are usually unaware that their 'normal' communications can be frightening or even harmful. By being mindful of how we speak to patients, by modifying our language slightly to convey either neutral, reassuring, or, if possible, positive connotations, our communication can have beneficial effects.

MJ: It cannot be easy to deal with negative suggestions by others.

CB: It is not at all easy. In fact, by the time I see patients, many have already been inundated with negative suggestions from doctors, the media, family, and others. This is particularly common and serious with cancer patients. Some have been so harmed that they have given up hope altogether, and the quality of their life has deteriorated as a result (Bejenke 1995, 2000a, 2000b). But even non-cancer patients receive a plethora of negative suggestions.

In one instance I asked a woman how she expected to feel after her hysterectomy.

She said, 'My doctor says I'll feel like I've been run over by a truck.'

My response was, 'Would you mind feeling better than that?'

The patient said, 'You mean like being run over by a small truck?'

I asked, 'Better than that?'

Patient, 'By a car?'

I, 'Better than that?'

Patient, 'You mean, a small car?'

I, 'Better than that?'

Patient, 'Maybe a ... motorcycle?'

I, 'Better than that?'

Patient, 'You mean a ... bicycle?'

I, 'Would you mind *not* feeling like you were run over by *anything* ... just feeling some pressure underneath your bandages ... and maybe some cramps ... like when you have a period ... and things like that?'

Patient, 'Hmm ... that would be okay.'

This interaction sounds like a simple, everyday communication. But it contains several hypnotic elements such as *reframing*, *reinterpreting*, *revising expectations*, *utilization*, *leading and pacing*, *linking*, and *association*—and it took about 40 seconds! When I asked the patient after the operation how she felt, she said, 'Like I have been run over by a bicycle!' and laughed. She required no analgesics post-operatively—which her surgeon (who told her she would feel like she had been run over by a truck) said was 'unheard of after a hysterectomy'. A benefit achieved in 40 seconds!

This style of communicating is also *empowering* because it gives the patient *choices* and *control*. My comments and questions were designed to encourage her to utilize her *own creativity*. The choice—to feel like she had been run over by a bicycle—was entirely hers. Why did she have to have any pain at all? She obviously felt compelled to carry out her surgeon's suggestions at least to some degree by feeling like having been run

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over by something; but she modified her surgeon's suggestion by choosing the least painful option.

Another example occurred in the operating room. Mrs K had been very afraid of her kidney operation and was convinced that she would die under anaesthesia. I had spent much time during my pre-anaesthesia visit to provide her with a lot of information—using suggestive communication—as to why dying would be most unlikely and why she could feel safe. When she arrived in the operating room she was calm and relaxed—and had not needed a sedative. While I started the IV, attached the monitors, and did the measurements, I asked her where she would *love* to be right now. She responded 'Alaska'.

The surgeon overheard this and shortly before I was ready to inject the anaesthetic said, 'Isn't it terrible what is happening in Alaska right now! That horrible earthquake … then the tsunami … and so many dead!' I could not get him to stop talking about the many deaths. At the same time I needed to make sure that she would not go to sleep with such horrible suggestions when she had already been afraid of dying. I bent over her face and spoke directly into her ear, 'But this is not *your Alaska*.' She smiled—there was no time for more because, as usual, the surgeon was pushing to start operating and I wanted to protect the patient from additional negative suggestions. I proceeded with the induction, intubation, and positioning, while I continued speaking about *her* Alaska, addressing all the senses. I continued similarly during the operation and gave her 'progress reports' from time to time and just before the end of the operation I again spoke of *her* beautiful Alaska. She awoke smiling and, instead of moaning with pain, she said, 'Oh, Alaska was so beautiful …' I responded, 'And you can go back to *your* Alaska any time … while you are recovering … or at other times … and always enjoy the comfort [anti-pain suggestion], peacefulness and calmness of that place.' What nightmares would Mrs K have awakened to had she gone to sleep with her surgeon's suggestions?

Yet another example occurred on the ward. I was checking on Mrs R who had just had a total hip replacement (after the then-available procedures patients had severe pain). She was fully awake and very comfortable. Her internist walked in and said, 'You don't have pain yet? Wait till the morphine wears off [she had not had any] … and wait till you start throwing up … and then breaking out from the tape [she was highly allergic to tape] … and that pain when you have to get up … and then the constipation … and then the physical therapy—how you're going to hurt,' and walked out. Quite a repertoire of negative suggestions!

Mrs R was stunned and said, 'I'm not petrified now—*I was* yesterday—but that went away when you talked to me. You took such good care of me … and I am feeling fine.' I responded, 'I can see that you are fine … And, if you can feel so well *now* … when *other* patients are most uncomfortable … there is every reason … and you already know … that you will do very well for the rest of your healing and recovery … and surprise all your doctors and nurses.' She did just that.

These examples show that it is possible to modify the effect of negative suggestions to something less traumatic—simply via *suggestive communication*. Please also note that using hypnotic language or suggestive communication takes no additional time. In fact, if you speak those suggestions aloud you will find that most take only seconds, rarely a few minutes. This shows how beneficial and easily applicable hypnotic principles are in biomedical practice.

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MJ: Even though you have made it clear that elaborate techniques are not necessary for hypnosis to be effective, are there some specific techniques or exercises that you have found particularly useful that you use routinely in many or most cases, or in particular situations?

CB: Well, I guess I do use some techniques such as (1) suggestive communication or 'waking suggestions', (2) informal inductionless hypnosis, (3) patient-generated and patient-directed imagery, (4) formal hypnosis, (5) active alert hypnosis, (6) hypno-sedation, (7) hypno-analgesia, and (8) hypno-anaesthesia.

SUGGESTIVE COMMUNICATION OR WAKING SUGGESTIONS

The majority of my patient encounters occur when only minutes are available to accomplish the medical task itself, so neither informal or formal hypnosis are possible, and would, in fact, be inappropriate. For example, *direct suggestions* ('You won't have pain/nausea') would simply sound bizarre to our patients; suggestions for eye closure, eye roll, or hand levitation even more so. However, hypnotic principles can be applied during every part of my interaction with patients as *suggestive communication*—while attending to the medical situation, even under the most hectic or emergency circumstances. Therefore, I consider suggestive communication the single most useful 'technique' for biomedical practice. These waking suggestions sound like normal communication, are conversational, indirect, and permissive. They can be used with every patient in every situation, require no additional expenditure of time, no quiet surroundings, and no or minimal training for the clinician (Bejenke, 1993, 1996b, 2000c, 2001, 2008, 2011b).

Here are two examples of suggestive communication/waking suggestions that can be used pre-operatively for procedures such as chemotherapy, delivery, or C-section.

1. A patient who had several 'bad experiences' previously:
'Wouldn't it be nice … if it could be a whole lot different for you this time … and quite a bit easier than you might have thought.'
2. Reinterpreting pain and using it as a cue for reassurance and sense of safety:
'And I wonder, how pleasantly surprised you will be … as you are waking up after your operation … when you become aware of that pressure underneath the bandages … [i.e. reframing pain as pressure] … because feeling that pressure … lets you know … that your operation has already been completed … that *you are safe* … and that healing has already begun' [i.e. linking to three reassuring truisms]. (Note: 'you are safe' is one of the most important statements patients can hear during medical treatments.)

These suggestions are spoken while the physician proceeds with his/her usual tasks (in my case, wheeling the patient to the operating room, attaching monitors, inserting cannulae, administering blocks). They *sound* like any 'normal conversation' to anyone unfamiliar with hypnosis.

The following case illustrates the powerful effect of suggestive communication on fear, hypertension, pain, anaesthetic requirements, and recovery. Mrs G was extremely apprehensive before her cancer operation, had not slept for some time, and her blood pressure was dangerously high (225/125) despite powerful antihypertensive medications and sedatives. At the end of our pre-anaesthesia visit (I had not used hypnosis) she remarked: 'I was never told this much about the anaesthetic risks, but I was *never*

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less afraid' and her blood pressure was 150/87. 'It hasn't been this low in *years*!' she exclaimed. She slept without a sleeping pill, had no sedative before the operation, and arrived the next morning in the operating room with a blood pressure of 134/84. This is the time when our patients' blood pressures are usually highest—even when sedated. Instead, hers was even lower than the lowest pressure ever recorded by her doctor. She required very little anaesthesia and had a rapid and pain-free recovery.

INFORMAL INDUCTIONLESS HYPNOSIS

When 'conversational' hypnotic language (suggestive communication/waking suggestions) is used, inductionless hypnosis often occurs *spontaneously* within a minute or two; in a noisy spot of the hospital, the emergency room or the pre-operative waiting area, on the way to the operating room, on the operating table, in the recovery room, and elsewhere. The transition is usually imperceptible.

There are unlimited possibilities to achieve rapid inductionless hypnosis by using monitors, operating room equipment (Bejenke, 1990), the patient's anatomy, functional anatomy, and physiology as hypnotic induction aids. Here are some examples. They require no extra time as they are spoken while the medical work is being accomplished.

1. **Tightening or relaxing toes.** A commonly used relaxation exercise is tightening and relaxing the fists. However, an anaesthesiologist or emergency room physician needs the patient's arms and hands for monitors and IVs. Therefore, the following strategy uses feet instead of hands. Directing the patient's attention to his feet not only distracts him or her from what I am doing to the arms, but can also move the patient into trance.

   I might say, 'I know that you know how to tighten your fists ... which you did just a little bit ago when your IV was started ... But I wonder whether you ever thought of tightening your toes ... Can you think of what that would feel like ... Maybe you want to first wiggle just one toe ... then another ... so you know where they are ... and what they feel like ... And I don't know ... which toe you will use first ... and whether you will use your right foot ... or the left one ... or both at the same time ... [multiple binds] ... Then you might *gently** curl one or the other toe ... just a little—I bet you never felt your toes the way you feel them now.' (*Note: If the patient curls his or her toes vigorously, he/she could get cramp.)
2. **Using monitors, operating room equipment, the patient's anatomy, functional anatomy, and physiology as hypnotic induction aids** (Bejenke, 1990). The electrocardiography (EKG), pulse oximeter, blood pressure cuff, IV-drips, X-ray view boxes, or surgical lights can serve as biofeedback instruments or be reframed as non-threatening. Patients can be challenged to figure out how they work, causing them to become engrossed and distracted.
   a) *Use of monitors with adults*. I demonstrate how they can exert 'control' over some physiological processes by utilizing their own *physiologic responses*. I may ask them to concentrate fully on their own respiration, muscular tension/relaxation. I may direct their attention to the sounds of the pulse oximeter and demonstrate that they can actually change the pitch of the sound by how they breathe. Or I direct their attention to the EKG monitor (unless their heart rate is

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irregular), saying, 'I wonder whether you know that you can actually *change your heart rate*. Go ahead and look at the numbers. And now take a l-o-n-g, d-e-e-p breath and hold it [a Valsalva manoeuvre, of course, slows the heart rate]. Isn't it amazing what you can actually do? Did you have any idea *you can* change your heart rate—just with a breath?' Patients are always surprised by their ability to have such 'control'. (This is particularly useful for self-described 'control freaks'.)

Such experiences are not only empowering, but deep breathing is medically therapeutic; and it is the exact opposite of what anxious patients normally do: namely, breathe rapidly, shallowly, or breath-hold. With this technique, patients have lots to do and become so engrossed with observing and practising their ability that they are distracted from their fear. While I continue my work, placing blocks, and so on, I add suggestions for relaxation, comfort, safety, and often patients enter trance rather quickly.

b) Use of the EKG monitor with children (Bejenke, 1990). The monitor screen is reinterpreted as a TV screen on which a 'birdie' is flying around (the EKG-wave is erratic when the child is moving). The sound can be described as the birdie's 'beep-beep-beep' and is spoken in rhythm with the heart rate and rhymed:
'Beep-beep-beep – *birdie* wants to sleep …'
'Beep-beep-beep – *David* wants to sleep …'
'Beep-beep-beep – *birdie* deep asleep …'
'Beep-beep-beep – *David deeeeeeeeeep* asleep …' and so on.
It is also used to exert 'control' over some physiological processes.

3. **Use of breathing, favourite place, friend, activity.** Generations of anaesthesiologists who knew nothing whatsoever of hypnosis have used hypnosis-like techniques with children during the induction of anaesthesia: to imagine being on a merry-go-round, having fun, and perhaps 'getting a bit dizzy'; to imagine playing with a favourite friend, pet, or toy, or a visit Disneyland; and to 'Take a deep breath and blow up that balloon' (the anaesthesia bag) and 'notice how it is getting bigger and bigger' (of course, the anaesthesia bag does not get 'bigger', but the child can watch it deflating and inflating as he breathes, and can be 'mesmerized' by that). The anaesthesia mask can become a 'space mask', and the smelly anaesthetic gas 'the special astronaut air, that has been provided by space command … so you can have a great ride … and see so many wonderful things … And I wonder what you can already see out of that window over there? Is it … ? … or …?' (see also Litman, 2011; Martin et al., 2011). A basic understanding of hypnotic principles can facilitate such efforts further and these techniques are, of course, equally effective in other situations.
4. **Informal hypnosis for emergency operations.** Hypnosis can also be used in the emergency room and for emergency operations. I recall Jill, a 4-year-old girl whose left index finger had accidentally been amputated by a hedge clipper. She had to undergo a re-implantation (reattachment) of that finger immediately. Her parents were absolutely petrified and, as the anaesthesiologist, I had to discuss the risks of anaesthesia (which I always do in great detail) with them. She was a 'high risk' case because she had recently eaten, and having food in the stomach can result in aspiration (drowning in the stomach contents) during induction of and emergence

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from anaesthesia. But we could not wait the six to eight hours for her stomach to empty, and even standard sedation was contraindicated.

In such cases, a so-called rapid sequence induction (also known as 'crash induction') must be done. In this procedure, the patient is put to sleep, paralysed, and intubated (breathing tube placed) within seconds. But to do this, one needs IV access—and no one in the emergency room had been able to place one in the struggling, screaming, vasoconstricted child. To make matters more complicated, I had only her right hand available for the IV and monitors because the left hand was going to be operated on. If she struggled at just the wrong moment, the only available vein could be ruined, making this an even more taxing situation.

As I wheeled her from the emergency room to the operating room—two minutes away—I asked her, 'What would you do right now if you were at home?' 'Watch TV,' she whimpered. 'What would you watch?' I asked. '*Woody Woodpecker*' she said. I had no idea who Woody Woodpecker was, but continued: 'Can you see what Woody is doing right now?' 'Yeah!' 'Watch what he's doing! … Isn't that fun! … Look, he's jumping and flying all over the place!' I did not know what Woody Woodpecker usually does, but continued, 'And guess what? … You can play … and jump … and fly … *with* him! … Look what you two can do together! It's *so*… much … fun!' By this time, we had arrived in the operating room. Three nurses were ready for the usual struggle and risks: they had blankets to 'mummy' the patient, restrain and subdue her, and two suctions ready. While I continued to talk of Woody, two nurses held her to prevent her from pulling away, but were amazed that she did not move when I tightened the tourniquet and used an alcohol swab. She did not even jerk when I inserted the needle into her hand. Nor did she respond when we lifted her to the operating room table. She was asleep! I did the crash induction safely, and the surgeon proceeded with the operation.

The end of anaesthesia is equally dangerous for patients with a full stomach. They must have regained protective reflexes before the endotracheal tube (breathing tube in the windpipe) can be removed. That means they have to be completely awake. But the tube is very irritating and causes an irrepressible cough reflex. Usually patients struggle, try to pull it out, and must be restrained for their own safety until it is safe to remove the tube. This is what the nurses were prepared for.

I had been speaking to her during the operation and when the plaster cast was sufficiently set said, 'Well, now … in just a little bit … you can come back to this place … because Mommy and Daddy are already waiting for you … And … in just a little bit … you can say goodbye to Woody Woodpecker … and thank him for having played with you … and tell him how much fun you had … You can also tell him that you're really looking forward to playing with him again … next time you come to the operating room … [this was to prepare her for the reconstructive operations which she would still have to undergo, so that they could be equally atraumatic experiences for her]. And when you wake up, it will be so nice to see that big white bandage on your hand [which otherwise might frighten her] because everybody can draw faces on it. And your finger can feel just fine in there … just fine … like in its own comfortable little bed … And in just a little bit … you will feel a little straw [endotracheal tube] in your mouth.' Once the plaster cast was sufficiently set, I

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said, 'And when you're ready for me to take that straw out of your mouth ... you can just sit up and give me a big smile.'

She sat up immediately with a broad grin on her face—a sight none of us had ever seen before: an endotracheal tube protruding from the mouth of a happily smiling child. Instead of coughing, struggling, and retching, she opened her mouth widely, I suctioned (not even that caused her to cough and gag, as it usually does), I removed the tube and brought her fully awake and pain-free to the recovery room.

An additional benefit for this child, who later required additional reconstructive operations, was that she was not traumatized psychologically by the IV-placement (not even local anaesthetic plasters were available then to ease the pain of the needle stick) or by struggling with the endotracheal tube. All this would have most certainly been traumatic without hypnosis. Such traumatic experiences often lead to severe life-long fear, even phobias, of hospitals and anaesthesia. Decades later, psychologists or psychiatrists are expected to 'fix' what we have caused—even though this kind of trauma could not be avoided when the patient's life was at risk.

5. **Imagery: patient-generated and patient-directed.** In my experience, so-called 'guided' imagery (see Simonton & Simonton, 1978; Siegel, 1988a, 1988b, 1990; Simonton 1994) is not nearly as effective as patient-generated and patient-directed imagery. It would certainly be impossible for anyone other than the patient to create such personally relevant, meaningful, and powerful imagery (see examples below). Many of my patients with cancer had tried guided imagery (I call it 'hetero-imagery') for months and by the time I saw them they had become convinced that they would die because they were unable to visualize what had been suggested to them. They believed that the proponents of particular forms of guided imagery had evidence that patients who were able to visualize the suggested images were the 'exceptional patients' (Siegel, 1990) and would survive. Consequently they viewed their failure with guided imagery as a death sentence.

   I use patient-generated and patient-directed imagery frequently in my anaesthesia practice with every patient and it often leads to trance.

a) *Imagery for distraction or trance induction*. As I wheel my patient into the operating room, I may say: 'I imagine that you could think of a place where you would *love* to be right now. Where might that be?' The response is usually immediate. As the patient begins to describe their place, he/she often dissociates. While I position the patient onto the table, apply monitors, insert IVs and other lines, I amplify the imagery experience by asking questions that guide the patient through all senses (visual, auditory, olfactory, tactile, taste, temperature). 'I wonder what the air feels like ... whether it is warm or cool ... or somewhere in between ... And whether the air is very still or whether it is moving. And *if* it is moving, on which side of your body you can feel it more ... Whether there are any sounds—and what *they* are like, as you listen ... And where the light is coming from ... directly overhead ... or ... and what it is like.' I neither expect nor do I usually receive answers. If a patient remarks 'Oh, I hear the water running' or 'The colours are so beautiful' or 'I feel the wind', I know his/her dominant sense and will then focus on it.

   It is most important not to be directive: it must be the *patient's* own place and his or her own experience.

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Mrs L did not appear awake when I brought her to the recovery room after her hysterectomy. Because the nurses were worried that she was 'unresponsive', I asked her, 'Could you please show the nurses that you are awake?' Smiling she responded, 'Of course,' and looked around, adding 'but I was still on my beautiful meadow.' I continued, 'Thank you for reassuring the nurses. Now you can go right back to your beautiful meadow ... and be so very comfortable' [an anti-pain and nausea suggestion]. To avoid further 'unresponsiveness', I added, 'but whenever your nurses or doctors check you, you might like to greet them with a smile.' She had no post-operative pain during her recovery.

When I visit patients later during their recovery, many ask, 'How did you know my place so well? You described it exactly as it is—so perfectly.' I knew nothing of 'their' place, of course, and I did not 'describe it' at all. I simply *stimulated their imagination* with my questions in such a way that *they* could experience *their* place without my having to know anything about it. But their response reflects the richness of their experience.

b) *Imagery of the immune system* is relevant for many conditions (e.g. cancer) in preparation for transplants to reduce rejection from allergic conditions. Over 30 years ago my first patient with severe genital herpes experienced complete remission after her second session and had no recurrence (I lost follow-up contact after a decade).

c) *Imagery with cancer patients.* For cancer patients the earliest possible intervention is most beneficial—namely, as soon as the diagnosis of a malignancy is made—for they will have been immediately inundated with negative suggestions from multiple sources (physicians, family, the media, and Internet). For patients with serious illnesses, I employ imagery as an ongoing process to tolerate procedures more easily, reduce side effects, and improve overall quality of life. I encourage these patients to develop their own imagery for psycho-neuro-immunology and for dealing with troublesome symptoms and the disease itself. This includes imagery of the diseased organ, the pathological condition, the immune system, and healing possibilities. Here too, the richness of their self-generated or auto-imagery is striking.

Example 1: A psychologist with advanced Kaposi's sarcoma, whose prognosis was poor, had desperately tried for months to use different imagery techniques which were very popular at the time (Simonton & Simonton, 1978; Siegel, 1988a, 1988b, 1990; Simonton, 1994). She felt hopeless, not only about her inability to visualize anything, but also because this inability meant that she would not be one of those 'exceptional patients' and live. When I told her that she did not need someone else's ideas of imagery, but that she had the ability to experience her own she had 'a horrible dream'. She opened a drawer. It was full of slithering silverfish. Disgustedly she exclaimed 'Ewwwwww!', slammed it shut and complained bitterly about this ugly, disgusting experience. But shortly she realized that 'they look exactly like those spindle cells [the medical term for Kaposi's sarcoma cells] my doctor showed me, the cells of my Kaposi's sarcoma'. She then found herself vacuuming up the silverfish. She continued to work with this image daily, and kept vacuuming them up whenever silverfish appeared. Whether this had anything to do with her unexpectedly long survival cannot be determined. But she felt tremen-

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dously empowered, no longer dwelled on her fear, but instead devoted herself to her new grandchild whom she credited with saving her life.

To facilitate the patient's own imagery further, I might say, 'I wonder where you will find yourself, so that you can accomplish what you need to accomplish for yourself today?' That's all I really have to say. Then patients may find themselves where and with whomever they need to be. That is usually the only 'induction' required. I remain quiet as they work. After a while, I might ask, 'And what is happening right now?' They usually describe an experience or conversation and I might ask, 'And is there something else you need?' But I usually say very little. If they get 'stuck', I facilitate the next step by asking further questions.

Example 2: Linda consulted me for relief of distressing symptoms caused by chemotherapy. She had been told that she had about a year to live. Only as an aside did it surface that she was born a Navajo Indian on a reservation. But, like many Native Americans, due to pervasive prejudices, she had left the reservation, disavowed her heritage, and had dissociated herself completely from her 'primitive roots'. After leaving the reservation at a young age, she had never returned nor been in touch with her family or culture, and did not want to have anything to do with it. To her utter surprise, in her imagery, an old Navajo woman in traditional tribal garb embraced her, gave her very specific and meaningful advice, and presented her with a gift, a pair of hand-stitched, embroidered moccasins 'to walk sure-footedly into your new life' (the 'new life' made possible by the chemotherapy she was just receiving). Who in the world but this patient could have come up with something this powerful and meaningful to her? Later I learned that she made contact with her tribe and a healing ceremony was held for her. She lived for years after she was supposed to have died.

Example 3: A breast cancer patient experienced herself on Noah's Ark, ducking arrows being shot at her. When shot in a finger, she was shocked and frightened. But then she said, 'I have been wounded, but I will heal and live.' Many patients report rich and moving spiritual experiences.

In their effort to be truthful, physicians may inadvertently deprive patients of hope. For example, I am now working with a man who had planned all his life to retire early and sail around the world. For 15 years he had worked on his boat. It was in superb shape. It was the best and safest boat it could possibly be. He had an additional engine, GPS, and other essentials. He had even lived on it for years to make sure that nothing was overlooked, made long sailing trips, and took hours of sailing courses, as did his wife.

They had sailed their boat from San Francisco to Mexico and spent a year in Mexico's Pacific waters, ensuring everything worked perfectly for crossing the Pacific, making whatever changes still had to be made, and awaited the end of the hurricane season. Just before setting off across the Pacific they returned to the United States for one last complete medical workup. Mike had had several stomach upsets which had been diagnosed as travellers' disease. Some findings concerned his physicians, however, so an exploratory operation was performed. Right after the operation, and while Mike was still in the operating room, the surgeon told Mike's wife, 'I hope he has his affairs in order—he has two months to live.' Cancer had

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grown through Mike's bowel and had completely encased it to such a degree that only a threadlike passage remained. This had been the reason for those bouts of pain and vomiting in Mexico: there had actually been episodes of bowel obstruction. Because none of his tumour could be resected or bypassed he would soon be completely obstructed and nothing would pass. The moment Mike awoke, the surgeon told him the same.

I had prepared Mike for the operation. In addition to my usual pre-surgical suggestions, I had recommended—as I often do—that he minimize visitors after the operation 'to save your energy for healing'. When I spoke to Mike a few hours after the operation, he complained that he was so tired: 'I have had so many visitors.' I wondered whether he remembered that we had spoken about not having many visitors 'because you need your energy for healing'. He shot back, 'What healing? The surgeon just told me I have two months to live!' I said, '*Your body knows how to heal*. *It has a lot of experience doing that*. You've had so many things happen in your life—yet you have always been able to heal. Look at all your scars! Of course, this might take some extra work on the part of your body. But your body knows how to heal … and you are strong … Where, exactly, this will go, we don't know, but things will heal.' (Please note: This was not a deceptive promise. His surgical wounds *will* heal. But it is also a suggestion for the possibility of a more positive outcome.)

I continued: 'You know, a doctor really cannot predict what is going to happen to you. We doctors can only give our patients the best guess and statistics,' and I explained a little about the bell-shaped curve—that half of patients do better than average, and that some do much better than average. 'No one knows where you are on that curve. But we also know that *we can change where we are on that curve*.' From that moment on, Mike started to 'fight'.

Meanwhile, Mike had several courses of chemotherapy and he's still alive today. I worked with him after his operation, encouraging him to use his amazing ability with imagery (which had become apparent during the pre-op preparation). His boat took him where he needed to be, he swam, floated, and dove in the 'healing waters'; and he's been doing that ever since. Despite the bowel obstruction by the cancer, he somehow manages to pass food through his bowels. No one understands how that is possible. 'A dolphin swims and wiggles through my gut and keeps it open,' he told me. I did not give him this suggestion—it was a self-generated image that he had created in what he called his 'meditations' (others might call it self-hypnosis) at home.

So far, Mike has survived for more than three years following his diagnosis, though he had been told that he had only two months to live. Meanwhile he has been to Europe twice. He has joined an exercise club, has gone mountain climbing, skiing, and sailing. (Other patients of mine have lived for 15 years after a diagnosis so dire that they were not given a year to live.)

It would, of course, be improper to conclude from anecdotal examples such as this that such modalities can impact the course of an illness or extend survival. On the other hand, double-blind, controlled studies are not possible for such cases (and for most other situations about which I speak in this interview). But I do think that patients who are encouraged and who use imagery, hypnosis, meditation, and

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so on to help them tolerate or minimize disease-related symptoms (e.g. pain, nausea, itching, poor sleep, poor food intake) and who wish to achieve important goals, seem to live longer. They certainly have a better overall quality of life than those who are told directly or indirectly that they only have a short time to live, and that nothing can be done. It would seem reasonable to collect and study such cases in greater numbers.

FORMAL HYPNOSIS

Formal hypnosis can be useful for any medical situation or procedure, such as to ease adherence to complicated or difficult medical regimens (diabetes, cardiovascular disease, renal failure); for chronic illnesses, cancer-related symptoms, chemotherapy, and radiation (nausea, insufficient food intake, difficulty sleeping, shortness of breath, pain); for psycho-neuro-immunology; in preparation for operations and other invasive procedures; for transplants; and for obstetric complications (severe hyperemesis, threatened abortion), birthing, and others.

Even for formal hypnosis, quiet and 'comfortable' settings are not *essential*. Patients readily enter trance in uncomfortable hospital chairs, with toilets flushing loudly next door, people walking into the room, my beeper blaring directly into the patient's ear (before cell phones), physicians speaking to me urgently by phone, or recovery room nurses reporting on my patients' condition and requesting orders. In fact, patients remain in trance even while I have urgent conversations on the phone, and I continue hypnosis whenever I am put on hold.

Patients are taught self-hypnosis during the first session: via one breath, shoulder pressure, or other anchors. Of the many induction techniques I use, I will describe only one: shoulder pressure.

Breathing paced shoulder pressure is one of the most effective, yet extremely simple and rapid techniques (see also Bejenke, 2004). I have taught it in my workshops for decades and my patients remember and use it for decades later. Shoulder pressure serves for *pacing*, *deepening*, and as an *anchor*. There are long and short versions and several variations of this technique.

Here is one of many. I cup my hand over the patient's shoulder. He/she is asked to make very tight fists and hold them for as long as he/she chooses:

Really notice how it feels … so tight … and not all that comfortable … So … when you don't want to hold them any longer … you can take a very … l-o-n-g … d-e-e-p … breath … and hold that breath … that's right … and when you don't want to hold that breath any longer … you let it out with a big sigh of relief … that's right … [As the patient exhales with a sigh, I press down on the shoulder] … Now notice how different this feels … so much better …

And now you no longer need to think about your breathing … you can just let your body do the breathing [patient inhales, shoulder pressure lightened] … breathing in oxygen … that your body needs [patient exhales, shoulder pressure increased] … and out that stale spent air that your body no longer needs …

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Breathing out that which you don't need—making room to breathe in comfort [lighten shoulder pressure] … out what you don't need [increase shoulder pressure] … and in serenity [lighten shoulder pressure] … out what you don't need [increase shoulder pressure] … and in calmness [lighten shoulder pressure] … out what you don't need [increase shoulder pressure] … and in peace of mind [lighten shoulder pressure] … out what you don't need [increase shoulder pressure] … and in whatever else it is that you do need [lighten shoulder pressure] … [and on and on like that].

Fractionation via breathing and/or shoulder pressure is very effective. That is, after arousal, I have the patient take another deep breath, hold it again—as long as he/she chooses. During exhalation, I press down on the shoulder with my cupped hand saying, 'Into even deeper comfort … each time you breathe *out*.' I repeat arousal and re-induction one to three times, and by then patients are in a very deep trance. This adds an additional two to three minutes to the procedure.

A shoulder pressure *cue* can be used to induce instant self-hypnosis. During fractionation, I give the suggestion that patients can achieve instant relaxation and relief of pain or troublesome symptoms, either by holding a breath briefly and suddenly exhaling, or by touching their own shoulder, or even by only thinking about touching their shoulder. They may also ask someone (a nurse, a loved one, even an anaesthesiologist) to simply touch their shoulder, and it will be as effective as it is *right now* (in my office). These individuals do not need to know anything about what this means, let alone about hypnosis. However, I always add the protective suggestion that any other such touch will have no effect whatsoever, unless it is desired by the patient.

ACTIVE-ALERT HYPNOSIS

Because medical care givers would become alarmed if a patient who had not received pharmacologic sedatives were not to respond 'normally' or appeared sedated, *full alertness is* critical in most medical settings. Therefore I have always taught my patients to remain fully alert while in trance, in order that they can respond to all enquiries, requests, and communications by their medical care givers. But they are also taught to remain *profoundly comfortable*. I teach this while the patient walks around in my office, with open eyes, and we speak about different topics. To induce self-hypnosis, the patient can use the breath, shoulder pressure, or other anchors. Via several fractionations (inductions, reversals, and re-inductions) patients learn that they are able to use these skills at any time, not only for medical interventions, but also for different predictable and unpredictable situations of everyday life (except when driving or doing other activities where any kind of trance would be contraindicated).

When established patients become acutely ill, or are in the late stages of terminal illness and need to be tided over between my house calls, or when they call me desperately while I am giving anaesthesia in the operating room, I can speak to them briefly by phone to improve their comfort. I then call them back as soon as I can between cases and do a longer hypnosis intervention via telephone. I have also done a preparation for cardiac surgery via a trans-Atlantic phone call for a colleague in Europe who requested it, and for a few other established patients.

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HYPNO-SEDATION

I have used hypno-sedation with thousands of patients for surgical, radiologic, cardiologic, endoscopic, and other procedures since the 1970s in place of pharmacologic sedation: to calm patients prior to conventional anaesthesia and during operations under local, spinal, epidural, and different block anaesthetics (e.g. C-sections). It is highly cost-effective (Lang & Rosen, 1999) and has been used for thyroidectomies (Faymonville et al., 1995; Meurisse et al., 1999; Defechereux et al., 2000; Montgomery, 2002), for radiologic interventions (e.g., Lang et al., 2000, 2006), and for certain craniotomies, because the brain has no pain sensation.

HYPNO-ANALGESIA

Hypno-analgesia means elimination of pain by hypnosis alone. I have used hypno-analgesia with all my surgical patients—usually via waking suggestions, sometimes via formal hypnosis. Most of these patients require little or no pain medications post-operatively. I also use it with chronic pain patients. The effect of medications is increased by hypnosis.

HYPNO-ANAESTHESIA

Hypno-anaesthesia includes analgesia (freedom from pain), sedation, and calmness *without pharmacologic agents*. Complete muscle relaxation (paralysis) necessary for certain operations cannot be achieved by hypnosis. Published reports mention up to many weeks of preparation, which is not cost-effective.

I have used hypno-anaesthesia as the sole anaesthetic for major and minor operations, but I consider it of minor importance. Its benefits are no greater than those achieved by methods which require no additional time: namely *suggestive communication*, *waking suggestions*, or *informal hypnosis*—combined with judicious use of certain types of conventional anaesthesia.

Hypno-anaesthesia is, however, highly cost-effective if it is carried out by *the operating surgeon* (endoscopist or interventionist), without an anaesthesiologist. Hypno-anaesthesia by the operating surgeon can even be life-saving in emergency situations. For example, the Irish surgeon Jack Gibson told me of operating on major abdominal, chest, and head traumas, mangled extremities, and lacerated hearts with nothing more than speaking to the patient while operating. These patients were at very high risk (bled out, full stomachs, crushed faces that could not be intubated). Many of them would not have even survived the then-available anaesthesia (Gibson, 1989, 1992). Equally remarkable was their recovery.

MJ: Can you describe how you do hypno-anaesthesia?

CB: I accept patients for hypno-anaesthesia only if they have obtained the surgeon's approval and we have a three-way agreement: the surgeon, the patient, and I each have the right to request conversion to conventional anaesthesia at any time, and that this request will be honoured immediately, without discussion or delay.

The preparation for hypno-anaesthesia is identical to what I describe for surgical preparation with suggestive communication, except for two additions: I demonstrate to the patient that he/she can (1) create complete analgesia and (2) control bleeding. I accomplish this by inserting a large bore (18 g) needle through a skin fold of the

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patient's hand. I then let the patient decide and observe from which of the two puncture holes she will bleed after I remove the needle. I also give the patient the choice of either somnolence, dissociation, or being fully alert during the operation. Most patients prefer to be fully alert. They require no sedative or pain medications during the operation, converse with the surgical team when appropriate, are pain-free post-operatively, heal unusually rapidly, and are discharged earlier than expected.

I will describe one case because it is the pivotal case which led me to recognize (1) the marked suggestibility of patients under stress, (2) the suggestive properties of physicians' communications, (3) the significance and power of unintended negative suggestions, (4) the seriousness of their effect, (5) our inability to discover pre-existing negative suggestions by others, and (6) the difficulty of reversing these detrimental effects. It was the recognition of these relationships that led me to develop my approaches.

Mrs N refused to have a necessary operation unless it was done under hypno-anaesthesia. The surgical procedure under consideration was a Marshall-Marchetti, a combined abdominal-vaginal operation deep in the pelvis. Her surgeon had agreed to hypno-anaesthesia, and the three-way agreement I mentioned earlier was in place. She wanted to be fully alert and aware, know and hear everything that was happening during the operation, and 'feel everything, except pain'.

During the operation she was so interested that she kept asking the surgeon to explain what he was doing, as she felt the team working—pulling here, retracting there, and so on. Because surgeons are not used to operating under these conditions, I explained, 'You know, the surgeon has to concentrate on what he's doing. So we shouldn't talk much. Afterwards Dr X will tell you everything he did.' She immediately stopped talking. Everyone in the operating room (except perhaps her and me) was incredulous that she could be so fully alert yet remain completely comfortable.

At the end of the operation, she moved herself to the gurney. As I rolled her through the recovery room doors saying, 'This is the recovery room', she suddenly experienced excruciating pain—the most severe pain I have ever witnessed. Neither she nor I could understand: after all, for her entire two-and-half-hour operation she had required no medications, no anaesthesia, or analgesia beyond hypnosis—nothing at all. Now, in the recovery room, her pain was uncontrollable. Even the most powerful opiates had no effect.

I asked her to go into deeper trance and reminded her that she knew how to control pain; that she had done so in the operating room to the amazement of everyone. She acknowledged all that—yet her pain remained unbearable. I was at my wit's end, as this went on for what seemed like hours. But it must have been about 40 or so minutes later when it occurred to me to ask her—in a deep trance—whether she knew why she had such pain. 'Oh yes, of course!' she responded promptly, to my utter astonishment. 'What is it?' I asked, 'What is the reason?' Again her answer was prompt: 'When I saw Dr X for the first time in his office [many months ago] and he explained the operation, he said , "And you know, of course, you're going to hurt like hell when you wake up in the recovery room." ' What a powerful suggestion! She was *now* in the recovery room—and she *was* hurting like hell!

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It is noteworthy that she herself was later incredulous that she had remembered her surgeon's comment in deep trance, for she had no conscious memory of it. She reiterated that she had been 'scared to death of that operation' until I had prepared her. And I realized that she must have been in a spontaneous trance during that first visit with her surgeon.

I was in a dilemma: of course, I was furious, but I couldn't say that it was wrong for the surgeon to say this. She had to trust and believe in him—and was obviously compelled to carry out his suggestions. Devaluing him was not an option. For if he was wrong about this, she might question everything else, including the outcome of the surgery. He was an excellent surgeon and had done a skilled operation.

What could I do or say to override his negative suggestion without undermining his credibility? I said: 'Your surgeon was absolutely right! He *honestly* and *correctly* told you what happens to *most* patients. But when you talked to him then, he did not know what *you are capable of*. When he told you that you would have terrible pain [note: I did *not* use his words] in the recovery room, he didn't know that you could go through the whole operation without any medicines, be completely awake, and yet feel completely comfortable. Only *now* he knows. In the operating room he was absolutely amazed that you had no pain whatsoever—and so was everybody else. Now *he knows* that *you know how not to have pain* [here the word 'pain' is necessary]—*how to be completely comfortable in all respects*. And, of course, *you know, that you can be pain-free* … even though other patients can't.' Her pain stopped immediately, and she did not require pain medications for the rest of her hospital stay and recovery.

This case is an example of the high suggestibility of fearful patients and the unexpectedly powerful effect of an unintended suggestion (many physicians use similar statements with their patients).

MJ: Can you give examples of how you prepare patients for operations or difficult treatments?

CB: When time permits I do a one session preparation in formal hypnosis for operations, chemotherapy, or other interventions or invasive procedures. This can be abbreviated to a few minutes. Ideally, patients who are scheduled for elective (i.e. non-emergency) operations should have a pre-operative preparation as early as possible. For then they will not have to suffer weeks of fear and sleeplessness.

Before trance induction, I ascertain the patient's *perceptions* of his illness and his *expectations* of the contemplated procedure. I then provide accurate and detailed information regarding anaesthesia, related components, pain control, recovery, and so on. Next I offer instructions for what the patient can do for himself. My verbalizations and suggestions are identical to those already mentioned with suggestive communication. In both situations I use time distortion, as time contraction or extension.

Once trance has been established, I systematically 'rehearse' every step of the upcoming procedure from 'right now' to beyond recovery (Bejenke, 1996b, 2000c, 2001, 2004, 2008). Via time progression the patient is 'looking back' from an indefinite point in the distant future to the events yet to happen.[1] 'And on that day after your

[1] For members of the British Societies of Medical or Dental Hypnosis, a video recording of my 2009 preparation for a coronary artery bypass operation may be available.

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operation, when you looked back—and I don't know when that might have been ... when you looked back in amazement ... and with great pleasure and satisfaction as to [insert specifics] ... how well you had [insert specifics] ... how much easier everything had been for you than you had expected ... how [insert specifics] ... and how [insert specifics].'

Among others, I address 'comfort' (freedom from pain, nausea, other unpleasant effects); if appropriate, minimal blood loss, rapid return of bladder and bowel function, minimal edema and lymph drainage, and a rapid and easy recovery. Devices or procedures which are particularly taxing or uncomfortable are specifically addressed—for example, the naso-gastric tube: 'And ... when you woke up after the operation and became aware of the tube in your nose and throat ... how you welcomed it ... for the good things that it was doing for you. Because it automatically drained your stomach juices that you didn't need right then ... [it actually prevents distention and its consequences of nausea and vomiting].' As Disbrow and colleagues report (Disbrow et al., 1993), resumption of intestinal peristalsis to reduce post-operative ileus can be affected by suggestions such as 'listening for and hearing that churning and gurgling when the bowel begins to wake up', and I add that 'once that happened, the tube could be taken out'.

Because patients are first *informed* in great detail, they need not 'fear the unknown'. The above suggestions are empowering because patients are shown how they can control symptoms which they did not know they could possibly control.

Following such preparation, patients are amazed by how relaxed they remain. But because they cannot imagine that this effect can possibly last for weeks, they often schedule another session shortly before the operation—although by then, they realize that they actually did not need it.

Malpractice suits, a bane for doctors, are often caused by what they did not tell patients or what patients misunderstood. Patients who are prepared in the described way are pleased and appreciative, in addition to being calm, less demanding, more proactive and cooperative, require less anaesthesia, fewer medications, less nursing care, are awake faster, have little or no pain, follow instructions well, recover more quickly, are discharged earlier than expected, and progress rapidly in physical therapy (of which they might have been deathly afraid).

CASE EXAMPLE OF A PRE-OPERATIVE PREPARATION IN FORMAL HYPNOSIS FOR MAJOR SURGERY UNDER CONVENTIONAL ANAESTHESIA

Dr C, a 56-year-old physician, was to have a second revision of a total knee arthroplasty (TKA) (Bejenke, 2004). Her experience with the original TKA and a subsequent one had been 'horrible'. She had experienced severe post-surgical pain, severe protracted nausea, and intolerance to most pain medications. Her rehabilitation had been seriously compromised because of severe pain during physical therapy. I had given her anaesthesia for a hysterectomy15 years earlier and had done a pre-operative preparation with hypnosis. Following the hysterectomy she had no post-operative pain and wondered whether pre-operative hypnosis might be helpful for the upcoming TKA. She did not remember details of our previous hypnotic session, except for shoulder pressure.

Following a hypnotic induction via breathing-paced shoulder pressure, I said,

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And, as you continue to drift into ever more wonderful comfort you may already be very curious, as to how surprised you will be … when you look back … weeks, months, or years after your operation … surprised as to how much easier everything has been for you [suggestion for an overall good experience] … than you might have expected.

How the comfort you had created for yourself … and are experiencing right now had stayed and stayed and stayed [suggestion for pain control] …

How, on that day after your operation, when you looked back—and I don't know when that might have been—when you looked back in amazement and with great pleasure and satisfaction to how well you had arranged everything for yourself [suggestion for empowerment] …

How much easier everything had been for you than you had expected …

How restful the nights had been before your operation …

And how, with every moment that had passed, you had felt yourself becoming ever more comfortable, ever more calm, and ever more relaxed …

And on that day after your operation … discovering how easy it had been for you to … [Here everything is addressed in the sequence that it will take place: getting up at home, arrival at the hospital, IV-start, undressing, being rolled to the operating room, positioning on the operating room table, placement of monitors, induction of anaesthesia. Then everything while the patient is anaesthetized: intubation, skin washing, draping, tourniquet, incision, hammering, wound closure, dressings, extubation, 'comfort' in operating room, recovery room, ward, tolerance of the machine which continuously moves the leg.]

Simply by thinking about that deep breath [self-hypnosis] … how good you had felt … once you had taken that deep cleansing breath in the hospital … And how easily you had been able to communicate with your doctors and nurses … in the most clear-headed way … Remembering everything you need to remember … to give them whatever information they needed from you … And remembering whether you still needed to ask them anything [suggestion for full alertness, yet complete comfort] …

Breathing out whatever you didn't need and breathing comfort into every part of your body and mind, wherever comfort was particularly needed, comfort throughout the entire area of surgery. That could last and last and last …

As you drift and float and sink into ever more delicious comfort …

And on that day after your operation, as you looked back to the post-operation period … how pleased you were at the surprise on the faces of your doctors, nurses, physical therapists and others … as to how well you had done and how well you had recovered …

So that you had been able to progress at such a wonderfully rapid pace. With such comfort and such confidence. Always able to communicate exactly what it was that you still needed from those taking care of you [suggestions for empowerment] …

And on that day after your operation as you looked back—weeks, months or years later … remembering the entire experience as something very special … and how after being released from the hospital, you had enjoyed the remainder of your healing process [suggestion for quality of life] …

And all the caring you were receiving until your complete recovery.

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Because Dr C's operation took place 1,000 miles away, I called her by phone on the evening of the day of her operation. She was wide awake, had just finished dinner, had not experienced any pain in the recovery room nor on the ward (unheard of then after TKA), and had declined the offered pain shots and pills. Her surgeons were very upset that she had refused pain medications. 'You *have* to have pain,' they insisted, 'everybody has pain after this kind of operation.' They insisted that she take the ordered medications, even though she reiterated over and over, '*I have … no … pain!*'

Dr C's only post-operative complaint was 'the unimaginative hospital food'. This was certainly an unusual complaint at a time when patients usually experience severe pain and can't even think about food. She also had no pain during her outpatient physical therapy. Thus, her rehabilitation progressed rapidly—in stark contrast to her previous experience.

Another example of the effect of pre-operative preparation was Mr E. He was extremely apprehensive about his pending radical prostatectomy for recurrence of cancer after radiation a few years earlier. This operation, known for high blood loss, particularly after previous radiation, was to take place at a distant university. As a scientist, Mr E had a very negative opinion of the 'hocus-pocus of hypnosis' and did not believe that it could do anything for him, but made an appointment to see me only to appease his wife. (I had given her anaesthesia many years earlier for a hysterectomy, later for bilateral mastectomies for breast cancer, and following this, for reconstructive surgery of her breasts. She had been pain-free after all three operations and did not experience any nausea, as after all other operations.)

When his wife asked him—after seeing me—how our session had gone, he said politely, 'She only talked—there was nothing to it.' (Indeed I had only talked—I did not use hypnosis. I had addressed every detail of his surgical experience, including minimal intra-operative blood loss, recovery, etc.) He called me a few days later: 'I can't believe it: no matter how hard I try, I can't conjure up any negative thoughts about the surgery. I hadn't been able to sleep since I found out that I must have the operation. But now I'm sleeping like a baby. All you did was talk to me … I don't understand it.' After the operation, his wife called me: 'The doctor was just here with us, and said "I've never seen any such thing. There was practically no bleeding … That has never happened… especially in patients who had previous radiation. But the next case was the usual blood bath again."' This is just one of many cases in which bleeding was reduced (or stopped) with appropriate language (see also Bennett et al., 1986; Hopkins et al., 1991; Enqvist et al., 1995; Trenkle, 2011).

FORMAL HYPNOSIS FOR SEVERE OR TERMINAL ILLNESS

Formal hypnosis can be very helpful for patients who suffer from severe or terminal illness. As always, I teach self-hypnosis during our very first session. Patients then use it immediately and regularly to sleep and eat better, rest more comfortably, to reduce or be free from nausea, pain, or whatever troubling symptoms they might otherwise experience. Self-hypnosis allows them to live as fully as possible in the moment, to enjoy the richest possible experience *right now*. Not that they deny the reality of their condition or neglect preparing for what they must prepare for. The breath and shoulder pressure

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techniques are particularly beneficial in the end-stages of cancer when patients are very ill and weak.

Even a brief hypnotic experience can have significant benefits. A young teacher who suffered from terminal glioblastoma multiforme had—in desperation—entered into an experimental chemotherapy programme at a medical school. These treatments caused violent side effects and suffering. He consulted me because he was anticipating the next treatment right after Christmas with such horror and fear that he was unable to sleep. Eating was problematic because of nausea. He was extremely weak, could barely get around, was dizzy, and had incapacitating headaches. Even harder to bear was the fact that he was 'treated as a number'. No one remembered him from one treatment to the next and there was no compassion for his suffering. During our session his wife nursed their cooing baby—the gift they had waited for after 15 years of marriage. Although I did not address her, she entered a spontaneous trance, so I spoke to both. At the end I taught her shoulder pressure because it was obvious that he would soon be too ill, too weak, and too obtunded to use self-hypnosis.

Two days later I found the following message on my answering machine: 'We got our tree today and to my surprise I had the strength to put it up. This will be a wonderful Christmas for us. I wanted you to know this and we thank you.' He died shortly after that but he and his family had been able to savour life for the short time they had left before his death.

The greatest fear associated with dying is pain. There is no medical justification to allow patients to experience severe pain, for medical treatment options for pain control are vast. I encourage patients to take appropriate medications. But hypnosis is extremely helpful in addition to medications, for hypnosis increases the beneficial effects of medications and other treatments, while reducing or eliminating their negative side effects. Most importantly, self-hypnosis is one of the few aspects of a patient's treatment that is under the patient's control. Even patient-controlled analgesia is not really under the patient's control, as it has necessary restrictions and it does not necessarily work as ideally as expected. But self-hypnosis or shoulder pressure applied by loved ones can provide instant and often long-lasting relief. Unlike opiates and other pain medications, it can be repeated without restrictions and does not cause nausea, respiratory depression, or heavy sedation. In fact, if patients choose to remain fully alert, they will do so.

Patients with terminal disease who are able to develop rich imagery and learn self-hypnosis usually die peacefully and without pain.

MJ: Do you give CDs to patients?

CB: Although I record my formal hypnosis sessions (I have hundreds of video and audiotapes), I explain to patients who ask for CDs of their sessions that it serves no purpose to go back to something that has already happened for them. They have learned and 'internalized' what they need; they know how to do self-hypnosis and from now on they will simply add whatever else is appropriate for them. Therefore, listening to an audio recording of a past session is a waste of their time and can, in fact, hamper their creativity.

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There is one exception regarding recordings: for established patients who have become too ill (usually in the late stages of cancer) and too weak to even use self-hypnosis any longer, I will prepare recordings. These recordings are tailored for the particular patient and should be used by that patient only. They can tide the patient over between my house calls or when they call me desperately while I am giving anaesthesia in the operating room. But even from the operating room I can usually speak to them briefly and improve their comfort. I will then call them back and do hypnosis via telephone as soon as I can.

MJ: If, as you have described, hypnosis is so beneficial in somatic medical practice, why is it not used more?

CB: Physicians who practice up-to-date high-tech medicine expect scientific evidence. Although data already show physically measurable effects of suggestion or hypnosis on the nervous system—that hypnosis has somatosensory effects; that hypnosis can reduce stress, fear, pain, or treatment side effects (e.g. nausea); that hypnosis affects blood loss, wound healing, burns, somatic, vegetative (autonomic), and immune function; that hypnosis can reduce some complications and improve some outcomes; that hypnosis is cost-effective; that hypnosis can enhance quality of life (see e.g. Faymonville et al., 2003, 2009; Kihlstrom, 2004; Wobst, 2007); and that hypnosis is effective with ventilated patients in ICU (Varga et al., 2007)—there is a major problem: *the techniques used for most scientific studies rarely fit the conditions and rapid pace of high-tech medical practices*. Simultaneously, publications by many clinicians are simply anecdotal (e.g. Gibson, 1989, 1992) and consequently without scientific merit (this includes my work and what we have spoken about in this conversation). Therefore, physicians are rightfully cautious. The other problem is that even those physicians who may appreciate the merits of hypnotic approaches have too few opportunities to learn techniques which apply to the conditions and circumstances of somatic medical practices.

Notwithstanding those facts, I would like to encourage my colleagues to consider integrating hypnotic principles and some such modalities into their work, even before scientific proof of possibly noteworthy benefits exists (e.g. decreased lymphatic drainage after axillary dissection), because hypnosis and related approaches are risk-free, highly cost-effective, take practically no time, and often make our own work easier.

MJ: So, how would you summarize what you have learned and discovered about hypnosis in your years of practice in biomedical medicine?

CB: What did I 'discover'? As you know, early in my medical career I made a number of observations which startled me. Further observations in thousands of patients led me to conclusions and in turn to develop the approaches about which we have just talked.

1. I observed that patients are highly suggestible and that the medical environment is highly suggestive:
   - Under conditions of stress and anxiety, patients become exquisitely suggestible and even exhibit signs characteristic of a hypnotic state.

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- High suggestibility persists from the beginning of a medical encounter throughout recovery.
- The medical environment is highly suggestive (via verbal and non-verbal communications, sounds, smells, sights, etc.).
- Patients are vulnerable to unintended but ubiquitous, negative suggestions—such as well-intended admonitions, 'innocent' comments or casual remarks—which can have unexpected detrimental effects.
- Statements by persons perceived as 'authorities' (physicians, nurses, others in white coats) are particularly powerful.
- There appears to be a hierarchy of authority for the effects of suggestions (i.e. suggestions by persons perceived as most important are more powerful than those by others).

2. I concluded that patients' high suggestibility can be utilized as a valuable opportunity, for example, via the use of:
   - Imagery.
   - Suggestive communication/waking suggestions.
   - Informal and formal hypnosis.
   - Importantly: suggestive communication/waking suggestions are as powerful as suggestions given during formally induced trance states.
3. I have found that hypnosis-related approaches have significant benefits:

a) For patients:
   - Improved tolerance of illnesses and interventions, rapid recovery, decreased blood loss, improved wound healing and immune function.
   - Patient empowerment via enhanced sense of competence, self-mastery, independence, dignity, and autonomy; increased coping skills, sense of control, and hope.

b) For medical care providers:
   - Excellent patient cooperation, overall satisfaction, reduced care demands.
   - No additional time expenditure for physicians.
   - No need for quiet surroundings, recliners, or complete privacy.
   - Minimal training for the majority of interventions.
   - Cost-effectiveness.

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AN EXPERIMENTAL APPROACH TO HYPNOTIC AGE REGRESSION: CONTROLLED STUDY OVER 10 HEALTHY PARTICIPANTS

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ABSTRACT

During hypnotic trance, it is easy to drive subjects to hallucinations with concrete form and features, and to give orders to be carried out both during and after trance. A possible hallucinatory order is age regression to a previous period of life. The aim of this study was to investigate through a Rorschach test and a test of intelligence the range of mental abilities both in basal conditions and in hypnosis with age regression. The purpose was to ascertain whether age regression is a real phenomenon, and to what extent it is able to modify the perception of reality. The study was conducted on 10 highly hypnotizable volunteers. Each participant was tested three times, in three different sessions (in basal conditions, in hypnotic regression of age, and in neutral hypnosis), in the frame of a Latin-square protocol. Heart rate, systolic, diastolic, and mean blood pressure, cardiac index, and total peripheral resistance were constantly monitored. The test of intelligence used was that of the progressive matrices of Raven. As evidence of age regression, each patient underwent a test of Rorschach in order to reveal features of infantilism associated with regression. The test of Rorschach carried out during age regression showed in all subjects a sharp increase in those variables that are typical of an infantile approach and a drop in those that are typical of an adult approach. This result confirmed the experimental hypothesis that patients were regressed to infantile age. The Raven matrices revealed a decrease in efficiency during hypnotic age regression in comparison to standard conditions (anagraphic age). The results demonstrated that age regression is real and measurable, and that in age regression conditions—but not in neutral hypnosis—subjects show a modified behaviour revealing a lower level of maturity.

Key words: hypnosis, Raven, Rorschach, intelligence, regression

INTRODUCTION

The phenomenology of hypnosis is multifaceted and can mimic many conditions (Faymonville et al., 2006). As a matter of fact, an expert hypnotist can easily suggest to highly hypnotizable subjects to experience a rich panorama of phenomena during hypnotic trance. In this special condition of modified consciousness represented by hypnosis, our research group has been able in the recent past to induce important plastic mono-ideisms leading to a rich phenomenology represented by trigeminal and non-trigeminal analgesia (Casiglia et al., 2007; Facco et

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al., 2009, 2011), neglect (Casiglia et al., 2010; Priftis et al., 2011), hallucinations (Casiglia et al., 1997, 2006), and increase of performance.

One of the most curious and appealing hypnotic phenomena is age regression (Gebhard, 1961). In this very particular condition, highly hypnotizable subjects can be suggested to feel younger than they are and can show behaviour similar, for example, to that of a baby. Nevertheless, it is difficult to clarify whether this is simply attributable to a subjective feeling (like a memory) or represents a real condition (revivification). Furthermore, it is also difficult to make age regression repeatable and measurable (i.e. experimental in nature).

When, in the frame of our many years of attempts to drive hypnosis in the field of Galilean sciences, we decided to tackle this problem, we realized that a special experimental model had to be created (see Figure 1). We therefore used a projective test of Rorschach (Staples & Wilensky, 1968; Bornstein, 2012) to clarify whether the participants, after receiving the hypnotic command of age regression, really had an infantile approach to life (a childish personality), and a test of intelligence (Raven, 2000) to evaluate the intellectual level of the participants during age regression, if any. As the Raven—like any mental test—is also a stressor (Rüddell et al., 1988) and the response to mental tests differs in adults and children (Kim et al., 2007), we also recorded the cardiovascular response to the test in order to clarify whether, during age regression, the response to the test was that of an adult or a child.

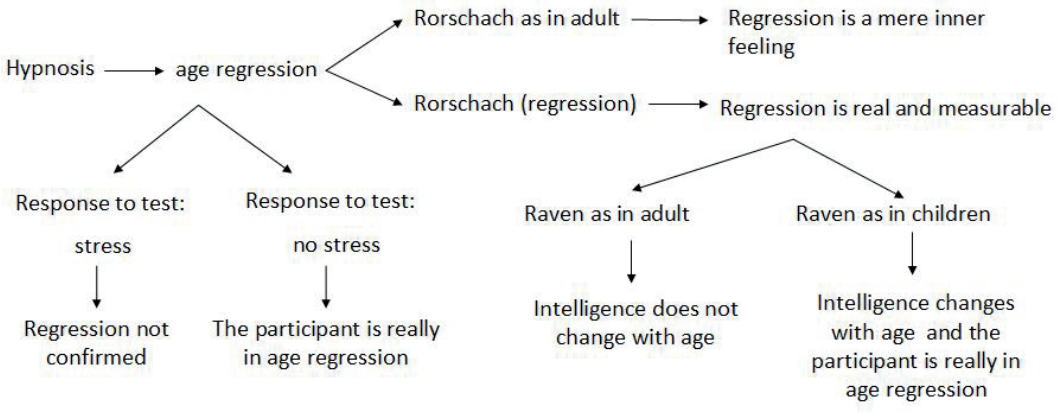


Figure 1. Experimental model

METHODS

GENERAL PLAN OF THE STUDY

Ten young, healthy volunteers, previously defined highly hypnotizable on the basis of the Harvard Group Scale of Hypnotic Susceptibility (Shor & Orne, 1962; Younger et al., 2005) and labelled as fit for hypnosis on the basis of the Minnesota Multiphasic Personality Inventory-2, were studied.

The study adhered to the principles of the Declaration of Helsinki and all subjects gave informed consent to the procedure. The local Ethics Committee approved the protocol.

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Each participant was studied over three consecutive days. On day 1, each participant was individually informed, gave consent to the study, was trained in hypnosis, was induced to hypnotic trance, and received the hypnotic commands specified below. On days 2 and 3, participants individually underwent in a random sequence the test of Rorschach or the matrices of Raven test.

HYPNOSIS

Preliminary setting. Hypnotic induction was obtained through a classic technique including verbal suggestions of relaxation and well-being according to a routine already used in the past by the same research group in Padua (Casiglia et al., 1997, 2010; Facco et al., 2009, 2011; Priftis et al., 2011). This preliminary procedure was aimed at favouring a valid mono-ideism on the occasion of experimental setting.

To reduce induction time, in this preliminary phase all participants received a post-hypnotic command oriented at reaching immediately the mono-ideism. In practical terms, a conditioning was administered to come back immediately to profound hypnotic trance every time the hypnotist pronounced a conventional word. This conditioning has the structure of an unconscious neurological command and hearing it is at one with obeying without any intervention of consciousness.

In this phase, the Harvard Group Scale of Hypnotic Susceptibility Form A was also administered in order to ascertain the degree of hypnotizability of subjects. Those scoring > 9 were labelled as highly hypnotizable and recruited for the study.

Experimental setting. The day after the preliminary setting, the participants were individually driven via post-hypnotic conditioning to profound hypnosis and performed the test of Rorschach.

Post-hypnotic command of age regression was given, suggesting that the participant would have, after de-hypnotization, a feeling corresponding to his/her age of 6 years (Staples & Wilensky, 1968). The tests described below were administered. Finally, the participants were induced once again, and received retrograde amnesia for all the experiences they'd had during the experiment, including the experimental tests. Finally, age regression was removed and participants were de-hypnotized.

MENTAL REACTIVES

Rorschach test. The test of Rorschach was aimed at demonstrating that the participants had really reached—through hypnotic suggestions of age regression—the age of 6 years.

The test was composed of 10 white cards, on which selected, bilaterally symmetric ink spots were printed, and consisted in interpreting the spots. Rorschach's original belief was that the sensations raised by the spots induce the arousal of old feelings (Weiner, 2003). The chaos of the spots induces disphorya; by giving a personal interpretation, the subject puts the chaos into order with a creative act. As the test is projective, the way the subject chooses to organize or structure the spots reflects the basic aspects of his/her psychological dynamics.

The Rorschach task was proposed immediately before each Ravens task (see below), that is three times (in basal conditions at the anagraphic age, in post-hypnotic age regression, and in neutral hypnosis) according to a random Latin-square protocol (see Figure 2). The participants were in a well-illuminated room and in controlled conditions of temperature. The cards were

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proposed in their classic sequence. The results of each session were recorded to be analysed off-line in order to verify that the regressive age had actually been reached during the post-hypnotic setting. Only localizations of answers were considered, leaving out other variables. In particular, 'global' and 'detail' answers were taken into account. The former were those denoting an organized view and a good capacity to relate all details to form a homogeneous and reasonable whole; the latter were those denoting a limited capacity of relating the parts. The convention was to consider 'mainly global approach' as an index of adulthood, and 'mainly detail approach' as an index of infantilism, as children have, in comparison to adults, a limited organizational ability.

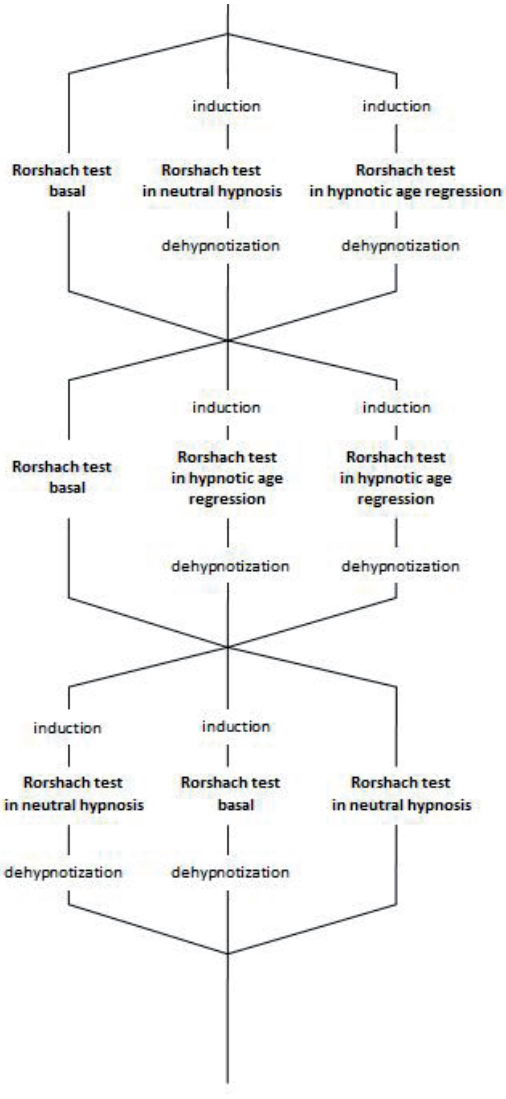


Figure 2. Test of Rorschach in a Latin-square protocol

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For the task, the participant was comfortably sitting in front of a table. He/she was asked to open his/her eyes while remaining in profound hypnosis, and to interpret the Rorschach images.

The test was performed three times: in hypnotic regression at the age of 6.5, in neutral hypnosis without any age regression, and after de-hypnotization, being the order chosen according to a random sequence.

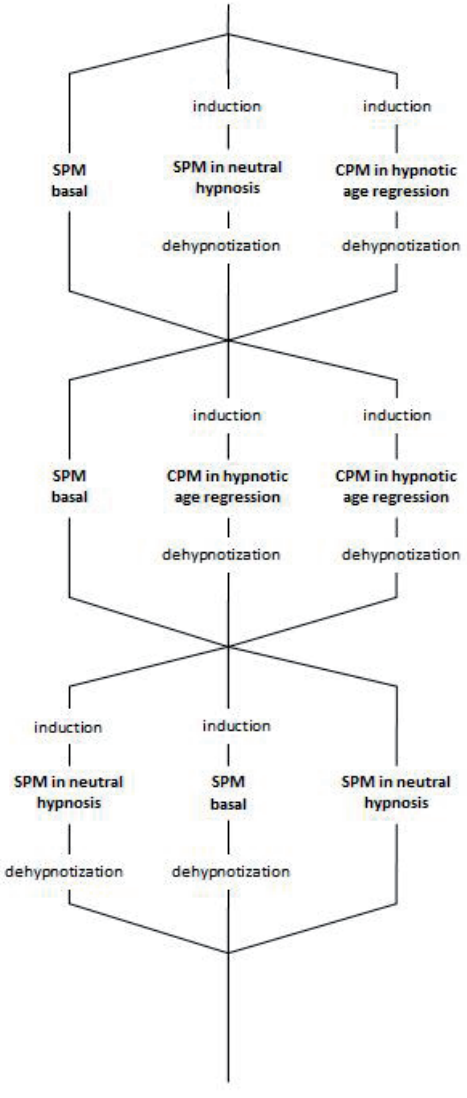


Figure 3. Test of Raven in a Latin-square protocol

Matrices of Raven. The progressive matrices of Raven are conceived to examine the maximum amplitude of mental abilities independent of age and cultural level (Raven, 2000).

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The task consists in choosing among six or eight pictures to complete a model. The standard progressive matrices (SPM) evaluate the ability to understand figures not having a defined meaning. They are composed of 60 items in 5 series of 12 problems, ordered by increasing degree of difficulty. The order of presentation of the tasks allows the participant to practise with a work system and to enter into a comprehension of the method. The coloured progressive matrices (CPM) have been conceived to be administered to children. The three series constituting the CPM are made to measure the main cognitive processes that are common resources for participants aged less than 11 years; they allow the participant to develop a theme of deductive reasoning. The global scale, which includes 36 problems, measures the development of the cognitive functions already present before the coming of maturity.

For the task, the participant was comfortably sitting in front of a table in a well-lit room at controlled temperature. The test was administered three times: in basal conditions, in hypnotic regression at the age of 6.5, and in neutral hypnosis without any age regression, according to a Latin-square random sequence. In basal conditions and in hypnosis, the participant was asked to keep his/her eyes open and to give the answer most appropriate to the problem according to the protocol shown in Figure 3. When, during age regression, the performance to CPM was adequate, the SPM were also administered.

HAEMODYNAMIC MONITORING

During the Raven task, the following haemodynamic parameters were monitored in order to explore the cardiovascular effects of the task as a stressor.

Arterial blood pressure was measured (in mmHg) by a Finometer PRO model-1 (Finapress Medical Systems, Amsterdam, Netherland), a stand-alone method providing beat-to-beat blood pressure recording (Schutte et al., 2004). Mean blood pressure was calculated (in mmHg) from the area under the curve of continuous blood pressure recording. The amount of blood ejected from the left ventricle at each systole (stroke volume, in ml) and in 1 minute (cardiac output, in $l \times min^{-1}$) were measured with an impedance cardiograph featuring enhanced bio-impedance signal morphology analysis (PhysioFlow TM-Lab-1, Manatec Biomedical, Ebersvillier, France) (Richard et al., 2001). Cardiac index (in $l \times min^{-1} \times m^{-2}$) was calculated by indexing cardiac output to body surface area calculated with the Du Bois formula (Du Bois & Du Bois, 1916). Total peripheral resistance was calculated (in $mmHg \times min \times l^{-1} \times m^2$) from mean arterial blood pressure/cardiac index ratio.

All these devices are validated and have previously been employed with success in the same laboratory in many experimental conditions, including hypnosis (Casiglia et al., 1992, 1994a, 1994b, 1996, 1997, 1998, 1999, 2000, 2006, 2010; Facco et al., 2009).

STATISTICAL ANALYSIS

A priori power analysis indicated that 10 participants were sufficient to show effects, if any, avoiding β error. Continuous variables were expressed as mean and standard deviation and compared with analysis of covariance and the Bonferroni post-hoc test. Statistics were adjusted for the covariates age, body weight, and baseline values. Experiment-wise error rate was taken into account when considering significance levels. The trend within each curve, as well as the differences between the curves, was evaluated with the analysis of covariance for repeated measures. The null hypothesis was rejected for $p < 0.05$.

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RESULTS

TEST OF RORSCHACH

The analysis of the behaviour of participants allowed us to verify that profound hypnotic trance was reached and maintained for the procedure. In particular, age regression was confirmed both through direct observation of childlike behaviour (with disorientation, weeping, childlike facial expressions, etc.) and through the test, showing 129% increase of 'detail' localizations and 24.3% reduction of 'global' localizations in comparison to basal conditions (see Figure 4).

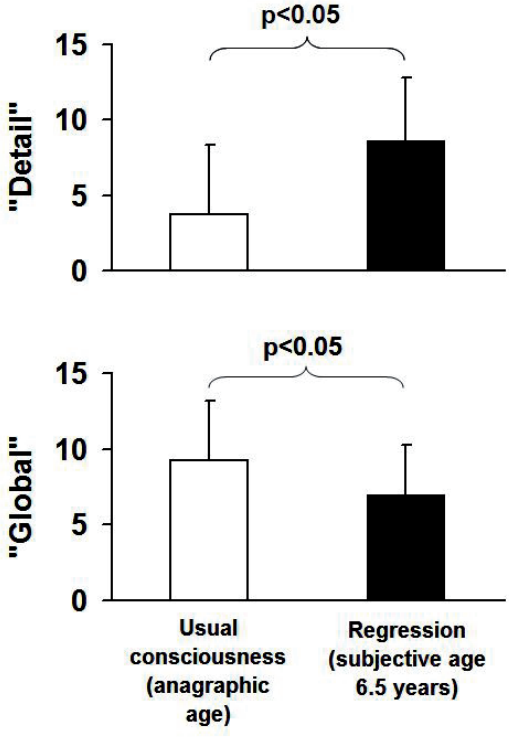


Figure 4. Score of the test of Rorschach in basal conditions and in hypnotic age regression in 10 participants. 'Global' and 'detail' answers are shown. Mean and standard deviations

MATRICES OF RAVEN AS A MENTAL REACTIVE

In basal conditions of usual consciousness at real age, the Raven score was on average 50.3 ± 4.3 (95% CI 47.1–53.6). This value did not change in neutral hypnosis at real age, while it increased by 12.5% in regressive hypnosis at the age of 6.5 years (see Figure 5). The time requested to complete the test was 15.3 ± 3.9 min (95% CI 12.4–18.3) in basal conditions and was not different in neutral hypnosis, while it increased by 85.5% in hypnotic age regression.

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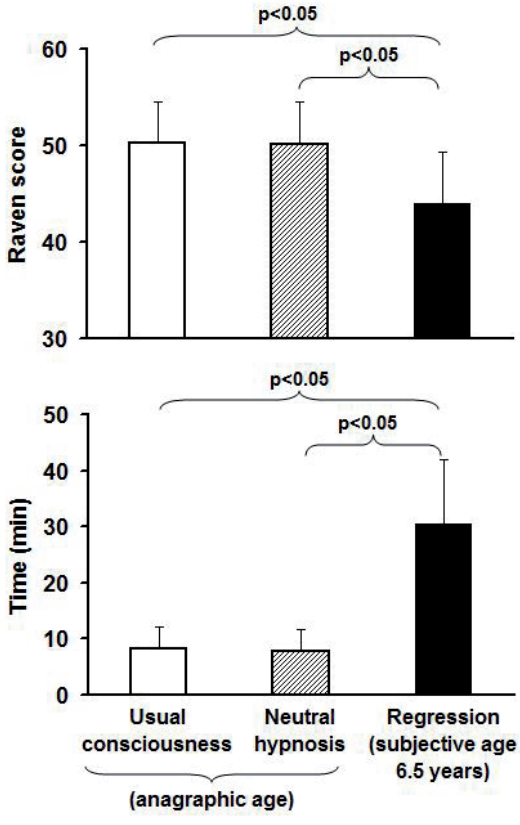


Figure 5. Score of the test of Raven in basal conditions, in neutral hypnosis at anagraphic age, and in hypnotic age regression in 10 subject. Mean and standard deviations

MATRICES OF RAVEN AS A STRESSOR

In basal conditions, the administration of the Raven matrices was accompanied by a significant increase of peripheral resistance (+6.4%) with reduction of cardiac output and of stroke volume due to reduction of post-load (see Figure 6). Comparable behaviours were observed when the test was administered in neutral hypnosis at real age. Conversely, when the test was administered in regression hypnosis at the age of 6.5 years no variation of the above-mentioned cardiovascular parameters was observed. Systolic, diastolic, and mean blood pressure and heart rate showed only modest and non-significant variations in the three experimental settings (see Table 1).

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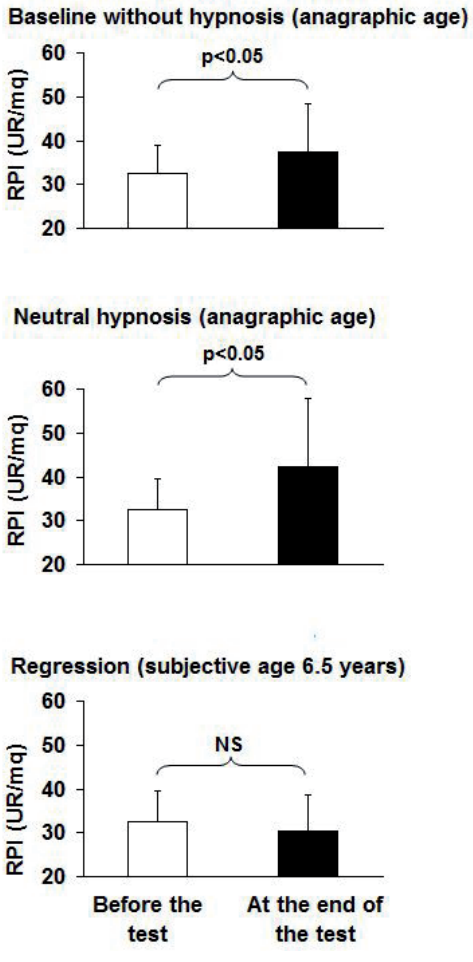


Figure 6. Cardiovascular response during the test of Raven in basal conditions, in neutral hypnosis at anagraphic age, and in hypnotic age regression. Mean and standard deviations.
RPI: peripheral resistance indexed to body surface area

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Table 1. Blood pressure (BP) and heart rate in the three experimental settings. No significance difference detected between phases

	Experimental phases		
	Basal conditions (anagraphic age)	Neutral hypnosis (anagraphic age)	Hypnotic age regression (subjective age 6.5 years)
Systolic BP (mmHg)	118.2 ± 8.3	120.0 ± 6.9	125.3 ± 5.8
Diastolic BP (mmHg)	76.9 ± 6.4	84.0 ± 14.9	86.3 ± 13.0
Mean BP (mmHg)	90.7 ± 6.7	96.0 ± 11.6	99.3 ± 10.2
Heart rate (bpm)	79.0 ± 9.8	78.3 ± 15.2	85.7 ± 17.9

DISCUSSION

The descriptions of hypnotic age regression available in the literature are sporadic and uncontrolled, and, to our knowledge, have never been described in association with a test of intelligence. The research described herein is therefore a pilot study. The few studies conducted with the test of Rorschach in conjunction with hypnosis are also sporadic and mainly involve psychiatric patients (Davis & Husband, 1931; Wolberg, 1948; Friedman, 1952; Fine & Zimet, 1959; Wilensky, 1959; Goldfried, 1962; Rhodes, 1963; Glatt & Karon, 1974). Staples and Wilensky (1968) from the City College of New York, obtained interesting results in highly hypnotizable non-psychiatric subjects who underwent the test of Rorschach both in standard conditions and during hypnotic regression at the age of 6. These authors outlined that the performance obtained during age regression was characterized by lower intellectual development.

When we decided to approach the topic of hypnotic age regression and its effects on intelligence, if any, we had the preliminary problem of demonstrating that age regression was a real and measurable phenomenon. The study by Staples and Wilensky (1968), although dated, gave us the basis to confirm age regression by means of the test of Rorschach. In our study, regression was demonstrated by a more concrete overall interpretation of the test, with greater attention to 'detail' variables and less attention to 'global' variables, an approach that was interpreted as childlike. We therefore felt authorized to administer the matrices of Raven during hypnotic regression at the age of 6.5 years, and to compare the results with those obtained at baseline in standard conditions, without any age regression, at the participant's real age.

The main results of the study are shown in Figure 5, showing a biologically relevant and statistically significant reduction of the Raven score during hypnotic age regression, associated with the doubling of the time required to complete the test. During age regression the volunteer showed mental abilities lower than at his/her real age. Over and above that, he/she also assumed the behaviour, voice, and facial expressions of a child.

It is also noteworthy that during age regression the Raven task was not accompanied by the vasoconstriction that is normally produced by mental stress. This response was actually

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present both at baseline and in neutral hypnosis. We interpret these finding by arguing that a playful approach, typical of childhood, has deprived the Raven test of its stressor effect, so reducing its impact on the sympathetic discharge. These objective variations of the cardiovascular response to the test—which are obviously completely unconscious and cannot be simulated—confirm the hypothesis that hypnotic age regression was a real phenomenon.

In previous studies, we demonstrated that many hypnotic phenomena, such as hallucinations (Casiglia et al., 1997, 2006), analgesia (Casiglia et al., 2007; Facco et al., 2009, 2011), and neglect (Casiglia et al., 2010; Priftis et al., 2011), are real and can be instrumentally measured with the methods that are typical of physiology. The present research confers the same dignity to hypnotic age regression, a phenomenon that until now had only been approached on a subjective basis.

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NEAR-DEATH EXPERIENCES AND HYPNOSIS: TWO DIFFERENT PHENOMENA WITH SOMETHING IN COMMON

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ABSTRACT

Near-death experiences (NDEs) are an intriguing and somewhat awkward topic in the scientific medicine. They can be defined as the memory of impressions occurring during life-threatening conditions, including a number of special elements such as out-of-body experiences, pleasant feelings, seeing a tunnel, a light, deceased relatives, or a life review. Their transcendent tonality leads one to consider them a priori as doubtful or non-existent, not relevant, or a matter of psychiatric or organic disturbances at most. The available interpretations of NDEs, despite being scientifically sound, so far remain only speculations or, at best, clues without any demonstration, while others are not even plausible or neglect facts incompatible with the ruling mechanistic and reductionistic view, showing the deep epistemological implications of their explanation.

In the past few decades NDEs, hypnosis, relaxation, and meditation have been included among the so-called altered states of consciousness (ASC), together with other physiological and pathological conditions, such as dreaming, sensory deprivation, hypnagogic states, epilepsy, effects of hallucinogens, and psychotic symptoms. However, the very term ASC, semantically suggesting abnormality, looks to be questionable for physiological mind activities like hypnosis and meditation.

NDEs and hypnosis appear as two entirely distinct phenomena, but some common processes probably tinge them. Hypnosis has seldom been used to evoke previous NDEs in an attempt to relive them; conversely, NDE-like experiences have been induced in hypnosis in the context of psychotherapy with the aim of approximating their transformational therapeutic aspects and facilitating both first- and second-order patient changes.

Fortunately, an increasing dissatisfaction has emerged in recent years with our merely organic medicine, which has been paralleled by a growing interest in consciousness, subjectivity, and spirituality. There is an increasing need to reappraise our paradigm and the still mysterious mind–brain–world relationship; the so-called ASC also call for a broader approach, to reappraise them in a perspective, including their still misunderstood physiology, merging mechanisms, contents, and meanings in a whole without prejudices, not even scientific ones.

Key words: hypnosis, consciousness, consciousness disorders, death, near-death, psychotherapy

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Near-death experiences (NDEs) are an intriguing and somewhat awkward topic in the scientific medicine. NDEs can be defined as the memory of impressions during a non-ordinary state of consciousness, including a number of elements such as out-of-body experiences (OBEs), pleasant feelings, seeing a tunnel, a light, deceased relatives, or a life review; these memories are generated during life-threatening conditions, such as cardiac arrest, coma, and shock (van Lommel et al., 2001; van Lommel, 2004; Facco, 2010). Despite all of us having heard anecdotally about these phenomena, usually we are inclined to consider them as doubtful or non-existent; anyway, not relevant, beyond clinical interest, or a matter of brain disorders or hallucination at most. As a result, physicians do not usually ask patients who have survived a life-threatening crisis about NDEs, nor do patients report them to physicians, or even to relatives, for fear of being considered out of mind. Following the first report on NDEs by Moody in the 1970s (Moody, 1977), an increasing interest in their phenomenology and pathophysiology has developed, leading to the publication of a sizable number of papers (Rodin, 1980; Greyson, 1983b, 1993, 2003a, 2003b; Sabom, 1998; Parnia et al., 2001; Parnia & Fenwick, 2002; van Lommel et al., 2001; van Lommel, 2004, 2011; French, 2005; Facco, 2010; Agrillo, 2011, Facco & Agrillo, 2012).

Their incidence, which is higher than commonly believed, as well as their phenomenology, including an awkward transcendent and sometimes even parapsychological tone, make them a relevant and intriguing phenomenon, which challenges the conventional reductionistic and mechanistic view of consciousness and the brain–mind relationship. Therefore, NDEs might help to open a new outlook on the definition of consciousness itself and its pathophysiology. It is a tricky road, involving deep epistemological implications; in fact, errors leading to false conclusions may spring from both an a priori acceptance or refusal of apparently strange and not easily explicable facts.

NDEs also have a relevant impact in clinical practice, since both physicians and psychologists may come into contact with patients reporting NDEs, and their relatives, who may need to understand the meaning of the experience in the process of recovering and coping with their life, and who may benefit from psychotherapy. The ruling mechanistic and reductionistic thinking of primary care givers may lead them to consider NDEs as mere psychiatric symptoms produced by brain disorders, misunderstanding the meaning and relevance of these experiences; instead, it is essential to avoid any a priori judgement and listen to patients respectfully with an open mind, in order to properly understand and help them in the process of integrating their experience into their lives (Griffith, 2009).

When dealing with NDEs, one faces their apparent discrepancy with current opinions on the nature of reality and consciousness, leading to an implicit inclination to neglect them or consider them as a meaningless consequence of organic brain disorders. Instead, despite the exact rate of incidence being unknown, it can be roughly estimated at between 10% and 40% of critical patients and some 5% of the general population (Greyson, 1993 2003a; van Lommel et al., 2001), an incidence which has probably increased in the past few decades thanks to the development of techniques of resuscitation and improved rates of survival and outcome.

Any prejudicial view, of whatever origin, introduces an unacceptable bias, which is likely to be epistemological in nature: it is a crucial problem, since any a priori refusal of facts to protect theories and beliefs inescapably turns scientific knowledge into a theology of paradigm and an imposition of dogma. In most cases, NDEs take place at the boundaries between life and death, between physics and metaphysics. They thus involve a wide and complex range of implications

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which do not pertain to science alone (in the more conventional and narrow meaning of the term). In fact, science is by definition limited to the exploration of the physical world only, not the other side of the divide. Our approach to the end of life necessarily calls for philosophy and religion, the latter being a deep philosophical matter to be approached well beyond its narrow doctrinal and dogmatic components.

On the other hand, this means reappraising the meaning of life and death as well as the mind–brain–world relationship, still an unsolved problem, while some 90% of the physical world consists of dark energy and matter which remains scientifically unknown (and probably will remain unknown for a long time) (Wilczek, 2009). Thus, metaphysics is, as a matter of fact, the tissue of the physical world and what we do know is much less than we believe we know. The scientific explanations and philosophical implications of NDEs have been analysed in detail elsewhere (Facco, 2010); here, the phenomenology of NDEs, their epistemological implications, including the problems introduced by language and their relationship with hypnosis, will be shortly outlined.

NDE: PHENOMENOLOGY AND SCIENTIFIC EXPLANATIONS

As already mentioned, NDEs are well-organized experiences reported in a similar way worldwide, across cultures and time (Belanti et al., 2008; Facco, 2010). Their main content can be summarized as follows: (a) getting into a tunnel with or without seeing a light at its end; (b) seeing a Being of Light; (c) OBEs; (d) holographic life review; (e) meeting dead relatives or unknown persons (with possible communication through thought transfer); (f) bliss, unconditional love, peaceful and pleasant feelings; (g) return into the body (usually unpleasant).

NDEs are strong and deep experiences with a clear transcendent tone. Although they mainly occur in critical conditions with a loss of consciousness, they have also been described in normal conditions and role transitions, such as two cases reported during divorce (Gabbard & Twemlow, 1991; Facco & Agrillo, in press). During an NDE, subjects report the perception of being in a non-ordinary dimension, of having trespassed the physical limits of their ego and ordinary space and time flow with clear awareness (Greyson, 2005). The light they see is defined as non-natural or supernatural, while the entities they meet are often not defined (figures of the religion they belong to are present in a minority of cases only); a great bliss and love is often felt, which can reach the mystic tone of full participation and fusion with the whole world (Facco, 2010).

These experiences are usually transformational, leading to an overcoming of the fear of death and to deep changes in their outlook on life and behaviour (Moody, 1977; Greyson, 1985, 1998, 2003a; Parnia et al., 2001; van Lommel et al., 2001; Parnia & Fenwick, 2002). Although these changes are generally positive (Greyson, 1983a, 1983b, 1993, 2003a; Roberts & Owen, 1988; Parnia et al., 2001; van Lommel et al., 2001), in some cases they may give rise to negative after-effects in the process of coping with them, such as social and family problems related to changes in the subject, including an increased risk of divorce (Greyson, 1998, 2001). Therefore, the process of transformation (including improved self-awareness, deeper insight, increased empathy and spirituality, appreciation of life and ordinary things) may be preceded by a difficult transition, during which the new values are properly assimilated. During this period they may need to share their experience with others and/or a psychotherapeutic support, which calls for a proper understanding that is free from any prejudice on the nature of NDEs.

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The main scientific explanations of NDE phenomenology are: (a) periphery-to-fovea retinal ischemia as a cause for tunnel vision (Blackmore & Troscianko, 1988; Blackmore, 1996; Nelson et al., 2007); (b) temporal lobe dysfunction, epileptic discharges, and REM sleep intrusions (Cheyne et al., 1999; Britton & Bootzin, 2004; Nelson et al., 2006; Facco, 2010); (c) glutamate-dependent excitotoxic damage (Jansen, 1989, 1990, 2000) and analogies between NDEs and the effects of hallucinogens (for a review see Facco, 2010); (f) multisensory breakdown involving the right angular gyrus for OBEs (Blanke et al., 2004; Blanke & Arzy, 2005; De Ridder et al., 2007; Lopez et al., 2008); (g) psychological hypotheses of afterlife expectation or memories of being born (Blackmore & Troscianko, 1988; Appleby, 1989; French, 2001; Britton & Bootzin, 2004).

All of these interpretations, despite being scientifically sound, remain so far only speculations or, at best, clues without any demonstration, while others are not even plausible or neglect facts incompatible with the ruling mechanistic and reductionistic view (Facco & Agrillo, 2012). Moreover, any interpretation should take into account that the specific content and meaning of an experience cannot be reduced to its hypothetical mechanisms only, although this may be involved in their origin. The mind–brain relationship is not yet properly understood and there is still a substantial lack of explanation on how neural circuit activities may generate qualia and the subjective essence of mind (Chalmers, 1995, 1999; van Lommel, 2004; Facco, 2010). Rather, the reductionstic approach may help in refusing a priori awkward phenomena such as NDEs and unduly relegate them to a meaningless activity, a mere consequence of brain dysfunction.

The hypothesis of NDEs as a by-product of brain dysfunction and/or drug administration is not tenable since the picture of delirium due to brain disorders or drugs (such as acute anticholinergic syndrome) have been well described in anaesthesia and intensive care with a clinical picture entirely different from NDEs (Facco & Rupolo, 2001; Xie & Fang, 2009; Frontera, 2011). Moreover, should NDEs be a mere epiphenomenon of brain dysfunction, a kaleidoscopic array of different fragmented impressions might be expected rather than the lucid, coherent, and well-organized transcultural experiences reported (which might be considered as archetypal, to use Jung's terminology). An amnesia yielded by the insult might be expected as well, cancelling out all impressions (perhaps this might happen to people not reporting NDEs). Indeed, the hypothesized mechanisms might have a trigger role for NDEs, but they cannot be responsible for their specific content or psychological meaning and its transformational consequence. Least of all can it explain other facts like witnessed OBEs.

The phenomenology of NDEs, including OBEs, might be regarded as intrapsychic psychological phenomena, like a sort of dream or hallucination, whatever their pathophysiology. On the other hand, patients reporting OBEs are occasionally able to witness what happened during the loss of consciousness (Sabom, 1998; van Lommel et al., 2001; van Lommel, 2004). The documented evidence of being able to retain a sense of identity, perception, and consciousness while clinically unconscious or in clinical death with a flat EEG (as in cardiac arrest) is surprising, while perceiving oneself as out of one's body and able to witness facts is puzzling and hardly explicable with our current concepts. These cases represent a difficult challenge to the reductionistic and physicalist view, but they cannot be neglected. There are only two possibilities: (a) the cases are fabricated (but this is not tenable) or (b) consciousness might be more than a simple emergent property of brain circuits and have non-local properties. *Tertium non datur*. Facing such a ticklish problem calls for a true sceptical stance; that is, neither

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accepting nor refusing anything a priori and avoiding to take scientific (undemonstrated) axioms for absolute truth.

In conclusion, NDEs are outstanding clinical facts with well-documented evidence and epidemiology. A rigorous study of these and other consciousness features might disclose new and unexpected trends leading to a deep reappraisal of the physiology of consciousness and even of its definition; this topic plays a key role in biology, psychology, science, philosophy and, in general, in the whole of human life. Despite the fact that we seem to know almost nothing as yet, a new, still narrow, path looks to be promising: that is, the approach according to relativistic and quantum physics. It provides an entirely new approach to consciousness, despite being hardly understandable in the field of biomedicine, the paradigm of which is still clinging to the physics of the 19th century. The quantum hypotheses of consciousness are as intriguing as they are revolutionary, but they are far from being demonstrated as yet (Hameroff, 1997; Hameroff et al., 2002; Nakagomi, 2003; Smith, 2006, 2009; Ventegodt et al., 2006; Persinger & Koren, 2007). Should they be proved in the future, they would explain the possibility of the non-locality of consciousness, turning NDEs, OBEs, and telepathy into natural and obvious physical facts, instead of implausible phenomena with a paranormal flavour.

EPISTEMOLOGICAL ASPECTS

According to Antiseri and Gava (1983), the history of science is a wonderful story of theories and beliefs disproved by new facts. On the other hand, beliefs (including scientific beliefs and dogmas) are often stronger than facts and behave like powerful filters which prevent us from understanding or even perceiving real facts when they look incompatible with them. As Schopenhauer said, 'Truth arises as a paradox and dies as obviousness'.

It is worth recalling the revolutionary strength of Copernicus and Galileo, up to the discovery of the relativity of time and space by Einstein and the demolition of the paradigm of classical physics by quantum physics. The most recent example of the supremacy of beliefs over facts is the dispute between mechanistic physicists and relativistic/quantum physicists, which led Max Plank to state: 'A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it' (Plank, 1949). It is the timeless human problem, well shaped by the allegory of Plato's Cave.

In general, any new theory has its detractors—they are ubiquitous figures in the history of science. Of course, we should not believe just any new report, but we should be aware of our cultural limits which may prevent us from recognizing true facts. At the beginning of the third millennium, we should be aware that the exclusive use of the ruling mechanistic paradigm is no longer enough and that the relationship between consciousness, language, and the brain—and their relationship with the external and internal worlds—is still far from being fully understood.

Our current paradigm is the result of Cartesianism, Positivism, and the Enlightenment, which have focused mainly on external, objective, material reality, as well as emphasizing the power of reason, intellect, and logic as the most relevant and powerful human faculties. This stance has been of great value and has allowed for the outstanding development of science and knowledge (mostly regarding the so-called *objective* physical world), but it has granted only a partial exploration of reality. The source of bias in this approach rests in its dualistic

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essence, which lets one analyse and know only at the cost of separating facts; thus leading to the false belief that reality is the result of separate, frozen facts and mechanisms, where only what we think to be significant is real. Thus, we have developed a utilitarian mind which is able to work very effectively on separated facts to gain advantages but is not inclined to synthesis—perceiving and fitting the complex relationship beyond the products of analysis. In many instances this separation may turn into a dissociative activity, since it arbitrarily separates what in nature is not, with an implicit risk of a sort of cultural schizophrenia.

Galilean science does not spring from a free epistemological reflection, but, on the contrary, is the result of a compromise in Galileo's personal conflict with the Inquisition. This led to the prevention of science from studying the mind and consciousness, since *psyche* has the same etymological meaning as *soul*; thus, consciousness and psyche were disregarded for centuries and relegated to philosophy and religion, and an artificial barrier was created between them and empirical science. It is odd to see how medicine has mainly taken care of patients in terms of Descartes' 'earthern machine', as if the role of mind would be irrelevant in both health and disease.

Where consciousness is concerned, our current position unwittingly meets Cartesian radical dualism—the separation of body and mind—and gives rise to a contradictory stance. In fact, we are inclined to perceive the mind as a strange guest hosted somewhere in the brain but entirely separated from the body; at the same time, we learn to shape our mind as the mere result of brain anatomy and neurochemistry, thus emphasizing only its organic aspect, despite the absence of any clear proof for such an axiom. Fortunately, there is an increasing dissatisfaction with this fragmented and contradictory view, and a movement to find a place for subjective experience in the scientist's world picture (Zeman, 2001). On the other hand, this is to recognize that Positivism has been invaluable in defining the boundaries of the field of investigation, thus withdrawing the often prejudicial influences of philosophy, metaphysics, and religion from empirical science; nevertheless, confined to the *objective*, material world, science has implicitly underscored subjectivity.

We should be aware that we can only get in touch with the external world through our mind and that so-called *objectivity* does not overcome the limit of *shared subjectivity*. Paradoxically, metaphysics is no less realistic than physics, since it is the new reality we necessarily meet when we die, whatever our religious, philosophical, or scientific position. Death looks like a mysterious door (a sort of star gate) which we trespass from our current world towards the unknown, whatever may it be (Nothingness, God, Hell–Heaven, reincarnation, none of them).

In conclusion, our conventional reductionistic and mechanistic approach seems not enough when it comes to defining consciousness, life, death, and near-death (Facco, 2001, 2010; Zeman, 2001; van Lommel, 2004, 2011); their definition is very hard, if at all possible, and necessarily involves physics, psychology, philosophy, and religion, besides biology. Despite our efforts to explain mental processes on an organic basis as the epiphenomena of brain circuits, mind and subjectivity remain the essence of human life to such an extent that withdrawing medical treatment is increasingly allowed in permanent vegetative states, while the very definition of brain death implies that life in itself is *psyche*.

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CONSCIOUSNESS AND PSYCHE

The study of consciousness is a difficult multidisciplinary challenge; the term itself has such wide meanings as to make it ambiguous. Consciousness includes a range of both conscious and preconscious processes as well as implicit capacities, selectivity, variability of contents, intentionality, and different aspects of self-consciousness (e.g. awkwardness in the company of others, self-detection, self-recognition, awareness of awareness, self-knowledge). Its complexity has also led to the formulation of several theories in the attempt to define its nature, such as information processing, neurobiology, and social theories (Zeman, 2001).

Consciousness is only the tip of an iceberg, the definition of which is far from complete. Our perception of consciousness is also biased by our prereflexive perception of the ego and cultural traditions, springing from the Cartesian *Cogito ergo sum*. In fact, consciousness is not the foundation of our existence but an evolutionary product; that is, the supernatant of a deep and unknown psychic well working without the need of consciousness. It is worth noting that the Zen tradition considers the Freudian unconscious as a part of the empirical mind (i.e. oriented towards the external world) and belonging to the surface of psyche, while the whole of the unconscious extends as far as the level of Buddha's nature—far beyond the conceptual mind. The latter is a matter of enlightenment which can be reached with the no-mind doctrine and meditation (Sukuki, 1958; Facco, 2010). It is worth noting how western culture discovered only a part of the unconscious just a century ago, while eastern philosophy has known about preconscious and unconscious mind processes for over two thousand years (e.g. the Yoga Sutras of Patanjali).

Western culture, with its emphasis on intellect, logic, and dualism has developed a rather egocentric, anthropocentric, and ethnocentric view of the world, where the usual third-person perspective used in science is often no more than a shared anthropocentric and ethnocentric first-person perspective—perhaps a view not so *objective* as is claimed. It also leans towards a static, mechanistic description of reality, where phenomena are mainly described from the outside, and are not sufficient to understand subjective reality.

Reality is not static; on the contrary it flows in an endless transformation. The psyche and consciousness are also in a ceaseless flux of information and elaboration. Therefore, the concept of *state* in classical physics and the term *state of consciousness* are also errors of the shared first-person perspective, only meaning that no significant change is perceived during the period of observation.

THE DISTORTING LENS OF LANGUAGE

We use a language to communicate with each other, but we must be aware that we are master and slave of our language and culture at the same time: the adopted paradigm allows for understanding a part of reality, but it prevents us from checking and even perceiving facts incompatible with it. Medicine, being focused on diseases and mainly adopting a statistical concept of normality, leans towards defining as dysfunction whatever looks to be different from the most ordinary conditions. Even the disease and its diagnosis are in some way a conventional fact, a noun attached to a wider and often only partly known process (Berganza et al., 2005), the definition of which depends on biological components, psychosocial and cultural frameworks. Such an approach has a strong risk of misconstruing the nature of awkward expressions of mind, with the possibility of taking a non-disorder for disorder (Wakefield, 2010).

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In the past few decades, NDEs, hypnosis, relaxation, and meditation have been included in the so-called altered states of consciousness (ASC), together with other physiological and pathological conditions, such as dreaming, sexual activity, starvation, respiratory manoeuvres, sensory deprivation, rhythm-induced trance, dancing, hypnagogic states, epilepsy, the effects of hallucinogens, psychotic symptoms, stupor, coma, and vegetative state (Nichols, 2004; Vaitl et al., 2005; Boveroux et al., 2008). Despite the ASC classification distinguishing physiological from pathological forms, the term *altered states of consciousness* looks to be questionable for physiological and intentional mind activities which do not necessarily imply the features of ASC. In fact, the term *altered* semantically implies the idea of dysfunction, assigning them a bad and unwarranted label of abnormality; on the other hand, the term *state* is inappropriate, since consciousness is a ceaseless processing unit. The term *non-ordinary activity of consciousness* looks to be semantically more appropriate. The very concept of ASC also implies that only what is ordinarily observed can be considered as normal. The same is true for the folk link between genius and madness, since both are beyond the limits of normal; however, the genius and enlightened man lie on the other side of the Gaussian distribution of normality in comparison to the mad.

Names, besides being verbal signs, provide substance to the designated phenomena: they belong to the grammatical category of *substantives*, the etymology of which means indicating or giving substance. The power of names has been well known since the beginning of human kind, since in the Bible it is told: 'So out of the ground the Lord God formed every beast of the field and every bird of the air, and brought them to the man to see what he would call them; and whatever the man called every living creature, that was its name' (Genesis 2:20). And then: 'Come, let us build ourselves a city, and a tower [Ba'bel] with its top in the heavens, and let us make a name for ourselves, lest we be scattered abroad upon the face of the whole earth' (Genesis 11:4).

The power of names and their meanings has strongly conditioned the history of hypnosis, where terms with a pathological or paranormal flavour, such as *magnetism*, *trance*, or *experimental hysteria* (assigned by Charcot) have helped in dismissing it. The same is true for the term ASC when applied to physiological and valuable mind processes like hypnosis and meditation. Where NDEs are concerned, the term ASC helps to perceive them a priori as pathological, skipping their cognitive and transformational potential. Likewise, the terms *hallucinogens* and *psychotomimetics*, used to indicate a class of psychotropic drugs, spring from psychiatric disorders, providing them with strongly negative connotations. On the contrary, shamanic culture considers them as *master plants* able to provide relevant teachings; other more apposite terms for these substances are *psychedelics*, *empathogens*, *entheogens,* and *entactogens*. The term psychedelic, introduced by Humphrey Osmond (Osmond, 1957) in the 1950s, emphasizes their capacity to reveal hidden aspects of the psyche, while empathogens and entactogens indicate their power to generate mystic experiences (increased feelings of participation and fusion with the whole world). Entheogens, introduced by Ruck et al. (1979), etymologically means *having God inside* and also denotes the power of fostering mystical experiences with an aspect of religious and divine inspiration (Jaffe, 1990; Nichols, 2004; Facco, 2010).

These examples show how names may give substance and lead us to judge a phenomenon according to its name; this is exactly what the Latin saying *nomen omen* (name is destiny) means. On the other hand, it is worth noting that hallucinogens have accompanied human kind since prehistory and have been always linked to spirituality, from the use of κυκεών

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(kykeon—the psychotropic drink of the Eleusynian Mysteries) to contemporary native religions and shamanic culture. The solely negative view of modern western culture is likely to depend on its materialistic stance, while master plants in themselves are neither good or evil, but only the use men make of them. Thus addiction is much more a cultural by-product than an unavoidable effect of the substance; this has been clearly shown by opiates, the substances with the highest potential for addiction, and, at the same time, invaluable therapeutic agents with no major risk for addiction when properly used.

Other terms, like hallucination, have been widely used to define both NDEs and aspects of hypnotic phenomenology. This term traditionally provides an instinctive and powerful negative suggestion of mental disease, skipping the fact that both illusions and hallucinations, like hypnagogic and hypnopompic ones, may also be a physiological phenomenon, spontaneously occurring in everyday life. It is worth reappraising the concept of eidetic imagination, a physiological phenomenon allowing us to perceive things that are non-existent in the external reality, in order to regain an awareness of the good, physiological powers of the mind and the limits between its normal and pathological expressions. Creativity is also a unique human virtue enabling us to make real what previously did not exist. A proper reappraisal of physiologic non-ordinary activities of consciousness would be welcome to avoid the verbal shortcuts leading us to implicitly misunderstand the nature of observed phenomena.

In conclusion, the problem of language, and the proper definition of mind activities, has deep cultural implications, since the inclination to render a pathological image of non-ordinary psychic phenomena seems to be a product of the 20th century, dominated by a materialistic and mechanistic view of the world. It is now time to reappraise the foundation of this naive realism and move towards a post-materialist psychology (Greyson, 2010). This will enable us to rediscover the world of subjectivity in medicine, as well as some apparently awkward aspects of mind physiology and spirituality, which are much more real and relevant faculties than was believed in the previous century.

A LINK BETWEEN NDES AND HYPNOSIS

NDEs and hypnosis appear as two entirely distinct phenomena, apart from being linked in the classification of so-called ASC; indeed, they are clearly distinct, but some common processes probably tinge both of them. Experiences similar to those of NDEs can be easily generated during hypnosis, such as: (a) imagining seeing oneself from the outside, (b) changing time perception, (c) recalling old and non-easily accessible memories, up to evoking reminiscences of alleged previous lives, and (d) performing a life review. Of course, there is neither evidence of any likelihood of previous life recollections (Ferracuti et al., 2002) nor do they imply the possibility of reincarnation.

Hypnosis has seldom been used to evoke previous NDEs in an attempt to relive them. The first case was reported in the 1940s (quoted in Holden & MacHovec, 1993) and concerned a man who had previously had a very pleasant NDE during an anaphylactic shock yielded by iodine contrast medium administration for a radiological investigation. The patient was submitted to hypnosis with the direct suggestion of going back to the moment of the NDE. When he recalled it, he underwent a sudden fall of arterial blood pressure with an increase of heart rate up to 190 beats/min, which reversed after de-hypnotization. These data show the psychosomatic power of hypnotic suggestions, which, in this case, replicated the whole

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experience including physical changes; this also suggests the potential risks of directly evoking critical situations. Holden and MacHovec (1993) addressed this problem and introduced a hypnotic protocol able to prevent unwelcome somatic reactions related to critical physical conditions during which NDEs are experienced. The way to safely evoke them during hypnosis is essentially characterized by suggesting to the patient that he is to remain in his actual physical conditions while recalling the content of his experience only.

NDE-like experiences may also occur in normal conditions without any real or perceived danger for life, in the absence of psychiatric disorders or psychotropic drug effects, but they still maintain their transformational power (Facco & Agrillo, in press). On the other hand, rites of passage in all cultures may include real risks and/or lead the subject to face the perception of death and rebirth to a new phase of life with increased awareness. In the Bwiti religion (Congo) a complex ritual is still performed nowadays with the use of Iboga, a master plant, under the influence of which subjects have an experience similar to NDEs (Strubelt & Maas, 2008).

The same can be achieved with hypnosis through its capability to induce experiences similar to NDEs. In the context of psychotherapy, Schenk (1999) used hypnotically facilitated waking dreams as an interactive projective technique to generate NDE-like experiences; the aim was to approximate their transformational therapeutic aspects and facilitate both first- and second-order patient changes. Patients were permissively suggested to imagine their life going forward towards its end. Most subjects spontaneously underwent NDE-like experiences, which were not dependent on any previous knowledge of NDEs or personal religious beliefs. The main features of these experiences were a deep sense of well-being, love, and peace in an atmosphere of forgiveness and absence of judgement. OBEs, life review, and the feeling of the presence of a guide, represented as a relevant person for the subject, or a superior entity, might also occur. These experiences, unlike true NDEs, did not end with the return into the body but with the visualization of their out-of-body part disappearing in the light. The life review also had distinct aspects, since during the simulated NDEs what mainly emerged were previous critical episodes; that is, ones which called for being revised in order to allow for a second-order change.

NDE-like experiences seem to have relevant therapeutic implications in achieving second-order changes, leading to positive and durable solutions to patients' problems. This technique looks curiously like the opposite of the usual retrospective psychoanalytic approach, since the past is recollected from the most crucial moment in the future, the projection of one's death, so is a sort of *forward to the past* or *back to the future*. In this envisaged situation, the positive ambience of forgiveness, peace, and love, devoid of any judgement, probably helps towards an equable and effective revision of the patient's problems in a more contemplative view. Perhaps the OBE also allows for keeping a proper distance from the conflicts and helps to revise them in a more detached and meditative way by decreasing the patient's unease. On the other hand, the transformative power of both true NDEs and NDE-like experiences is likely related to their deep meaning and the radical change of perspective they produce in comparison to the limited view of everyday life. This may help to increase the capability to think about life, death, self, and the relationship between self and the external world from a wider and more philosophical perspective, including the very meaning of life and the limited, relative value of social conventions and relationships.

Finally, hypnotically simulated NDEs may help to unearth possible common psychological and physiological aspects with real NDEs; they might lead to a better understanding of their

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nature and meaning. Instead, branding them as ASC (together with pathological conditions) prejudicially leads one to distrust and beware of them as mere hallucinatory or psychotic expressions unworthy of interest. There is a still misunderstood link between the phenomenology of NDEs, mystic experiences, vision of prophets and apostles, creativity, inspiration in poetry, art, and music, neurological diseases (such as temporal lobe epilepsy), psychiatric disorders, effects of hallucinogens, role transitions, hypnosis, and meditation (Facco, 2010; Facco & Agrillo, 2012). They probably have in common, at least partially, neurocorrelates which so far have been described in terms of dysfunction and pathology only, while their possible physiology remain still unknown or even mysterious. It calls for a broader interpretation of these phenomena, overcoming the limits of reductionistic interpretations, which are blind to the meaning of experiences, and reappraising the so-called ASC in a physiological perspective by merging their mechanisms, contents, and meanings in a whole without prejudices, not even scientific ones. At the same time, we should be aware of knowing much less than we believe in the field of the mind: consciousness might result in being more complex than we think and, perhaps, might have still unknown properties which look incompatible with the current mechanistic and materialistic approach, anchored to the physics of nineteenth century. It is a hard challenge calling for strong efforts, reappraising our scientific and epistemological ground without accepting or refusing anything a priori.

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BOOK REVIEW: The Handbook of Contemporary Clinical Hypnosis: Theory and Practice

Edited by Les Brann, Jacky Owens, and Ann Williamson
Wiley-Blackwell, 2011, 652 pages
ISBN 978-0-470-68367-5

Book review by Dr Nicole Ruysschaert, MD, Psychiatrist, President of the European Society of Hypnosis

As clinicians working with hypnosis, we are challenged to mobilize clinical insights, scientific knowledge, and skills developed by training and experience, and fine-tuning them to the individual needs of clients and patients. We often look for external support from literature, journals, and books, or we feel the need to consult Hypnosis Listserv or our colleagues to find inspiration and scientific evidence for a particular problem or approach. With the publishing of this book, the authors have done a wonderful job for us, as readers, clinicians, and teachers in hypnosis, by bringing together clinical experience, insight, and research data in one accessible volume. As seasoned clinicians they share their own ways of offering help, as they go about it in their daily practice. You will find direct support for your work as you learn about their way of flexibly integrating, adapting, individualizing, and improving hypnotic approaches, all with their personal flavours.

The book is divided into three parts: (1) Hypnosis: The Fundamentals, (2) The Stages of Therapy, and (3) Specific Disorders. There is a basic overall structure, with most of the chapters including research data, scientific insights, approaches to a particular problem, scripts, and case studies. This helps to make the information clear when applying it to practical work with patients.

In Part 1 you learn about the theory behind the therapy. Convincing data demonstrate 'a possible explanation for hypnotic phenomena that the ACC decreases the amount of inhibition of predicted sensations' (p. 13) and that 'highly hypnotizable people are normally strongly left hemisphere focused, but swing to an equally strong right focus when hypnotized' (p. 12). The authors have succeeded in presenting specialized information in an easy-to-process way. Essential when working with hypnosis are knowledge of hypnotic phenomena, concepts of hypnotizability, and the uses of hypnosis at different levels of functioning—from communication, personal development, and anxiety management to altering perception, unconscious processes, and physiology.

The editors respect Einstein's quote that 'imagination is more important than knowledge', so imagery and visualization deserve a special chapter (4). By using imagery to 'take your pain and discomfort and give it a shape by imaging or visualizing the first shape that comes into your mind—the shape may be abstract or concrete' (p. 46), you enter the world of clinical applications. This may stimulate your interest in reading further to discover many different applications.

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In Part 2, the chapter on explanations of hypnosis (8) offers the hemispheric specialization model, which is a nice tool to explain how our brains work. It suggests how 'in computer terms it seems that each hemisphere is programmed differently' and how 'in hypnosis we have logged on to the right hemisphere' (p. 98). Newcomers to the area are offered a complete script which they can memorize and reproduce in their own words to explain to their clients how hypnosis works and to allay any fears and myths. More experienced therapists get inspiration or variation for their psycho-educational work.

Similarly, in Chapter 9 on induction and deepening, you find complete scripts, some commonplace, but all spiced up with some new 'accents' showing how hypnosis can be practised in a flexible and up-to-date way. It leaves creativity to therapist—for instance, being integrative when generating a 'mindfulness trance'.

Chapters 14 to 40 guide you in the common applications of hypnosis. To cite just a few, you learn about hypnosis as method to improve self-esteem, treat anxiety and phobias, deal with psychosomatic and medically unexplained symptoms, as well as pain, eating and habit disorders, and how offer help in cancer care, oncology, and obstetrics.

Chapter 15 on anxiety and panic disorder gives, in only 24 pages, a 'complete' overview, covering the neuro-anatomy of emotional disorders and how to integrate hypnosis in anxiety work. A case study offers a lively illustration of the different methods used—from special place imagery and exploration of the pattern, to ego strengthening with the mirror exercise and metaphor of praise as a gift—in six fortnightly sessions of 30 minutes, demonstrating how hypnosis efficiently helped 'Melinda' to overcome her problem.

Recent insights have demonstrated that rumination is a problem in depression. Chapter 16 illustrates how hypnosis is a most useful tool to facilitate experiential thinking by using imagery and an observer position.

Chapter 18 on the often resistant and difficult issue of 'medically unexplained symptoms' offers suggestions for desperate doctors and therapists. It proposes integrating hypnosis in 'seeing the whole picture' (this view is common for all chapters) and explains that 'investigations are being carried out to exclude a problem and done alongside an exploration of the emotional and stress related issues'. The BIG ITCH (Belief, Imprint, Guilt, Identity, Trauma Conflict, Hysteria) offers clear questions and resolutions, illustrated with examples so that clinicians should feel motivated to perform their work with confidence and curiosity about what answers will come up.

On the subject of psychosomatic disorders, in Chapter 19 you will find a comprehensive model of the aetiology of migraine, fibromyalgia, and irritable bowel syndrome with a 'switch', where you learn how hypnosis can be helpful in generating changes.

The chapters on anaesthesia, surgery and invasive procedures (22) and oncology (23) focus rather more on scientific studies and effectiveness with an extensive overview of the research data. The chapter on cancer care (24) shows how patients are diligently guided through the whole process from diagnosis through to pre-treatment, remission, and any recurrence. It states: 'Hypnotherapy and related interventions can play an important part in improving the quality of life of patients at various stages of the cancer journey' (p. 373). I particularly appreciated the specifically adapted ego-strengthening technique offered with the mnemonic KUFALE (Know, Understand, Forgive, Accept, Like, Enjoy the 'me' inside me) (p. 356). Patients are also invited to discover ACE—Acceptance, Confidence, and Emphasis on all that is helpful

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and healthy in your life (p. 357). These are just two of numerous well-worked-out approaches; as always, individually tailored to the patient.

That 'pain is always a psychological state' (p. 293) and that 'pain can be considered a disorder in its own right' (p. 294), Chapter 21 underscores the importance of the study of pain mechanisms and treatment. A clear overview of the 'neuromatrix' input and output makes the complex theory easy to understand and explain. What we tell our patients has considerable impact on them: 'Imagery is often a representation of the patient's interpretation of the doctor's explanation' and 'This belief feeds into the pain neuromatrix and enhances its activation' (p. 304). Plenty of the studies mentioned illustrate how hypnosis can act to 'reduce the intensity or the bothersomeness of any pain' (p. 310).

Besides the widespread applications for which hypnosis has proved to be useful, a chapter on death, dying, and loss, a less common subject, illustrates how hypnosis can reduce death anxiety instead of leaving patients alone in their struggle: 'A dying person is losing everyone in their lives at one time. Many people feel as though they are floundering in a void. Voids are frightening places to be in. Many fear the mode of death; there are some for whom "not being" is the more frightening' (p. 378). For them Bernie Siegel's concept of using a white room may come in useful: standing at the door to the room the patient notices that a party is being celebrated beyond the door—a gathering of people being relevant to the patient—and if they wish, they are allowed to open the door and go inside (p. 378).

Chapter 35 on learning disability and autistic spectrum disorders shows some promising results which are 'encouraging' and 'further publications are eagerly awaited' (p. 534).

In Chapter 38 on informal hypnotic techniques, the hypnotic project is defined as a co-operative venture between participants (p. 567) and emphasizes the most fundamental of all hypnotic phenomena: relationships. Our choice of words and citations gently helps our patients to shift to a state in which the mind is more receptive. These techniques open a door to applications in a wider medical community which can improve patients' comfort in all kinds of medical and dental settings.

The book is a really modern, up-to-date version of Hypnosis Anno 2012, with computer metaphors, software, star wars and mindfulness trance, to name just a few strategies. I recommend it as a basic book for students and professionals working with hypnosis in medicine and psychotherapy. Even if you are experienced you will find new ideas, inspiration, and support for your work plus research data and much more besides. It is a book that deserves a special place on your bookshelf, or maybe on your desk, to use as a hands-on reference guide for daily use in your clinical work. The editors have succeeded in interweaving a thread through the work by using plenty of cross-references to other chapters which cover similar topics, methods, or techniques, although each chapter can be read on its own.

The book offers good value as this one book could replace many other volumes. It is an inspiring compilation appropriate for students, professional practitioners, and teachers in the field of hypnosis in medical and psycho-therapeutic practice. I am grateful to all the authors and editors who have created such a tremendous work.

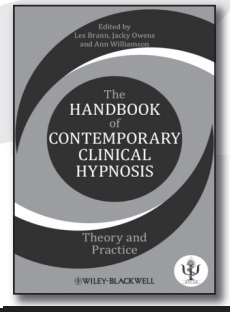
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British Society of Clinical and Academic Hypnosis (BSCAH)

The Handbook of Contemporary Clinical Hypnosis

Theory and Practice



Edited by **Les Brann,** *President of BSCAH and Clinical Lead for Chelmsford Medical Hypnosis Unit, UK;* **Jacky Owens,** *President of the Royal Society of Medicine's Section of Hypnosis and Psychosomatic Medicine;* and **Ann Williamson,** *accredited member of BSCAH.*

This unique collection is an invaluable resource for those interested in acquiring the basic skills of hypnosis, as well as those exploring more advanced applications in specialized areas. Written by clinicians for clinicians, *The Handbook of Contemporary Clinical Hypnosis* is the definitive reference text for our current understanding of hypnosis and its application in clinical settings.

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