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## Distant Healing Techniques and Distant Intercessory Prayer – A Tentative Scientific Conciliation

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Marcelo Saad and Roberta de Medeiros

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/60722>

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### Abstract

Currently there is a lack of a universally accepted theory that would constitute the base for the DH paradigm, and some fundamental issues about the mechanisms of DH remain non-responded. Even so, there is sparse documentation that intentions of one person can remotely influence mental and body functions of another person. With the available data, it becomes difficult to formulate an opinion about the validity of such techniques in healthcare. The question of DH may be put under the frame "Is the glass half empty or half full?". People who look at the issue of DH and see a half empty glass usually raise these points: Scientific evidence of benefit is poor, from scarce studies, many of them with methodological limitations; There is a lack of a coherent theory aligned to the ordinary reality based upon Newtonian science; Practical obstacles for healthcare include high variability of outcomes and low relevance of clinical effects. People who look at the issue of DH and see a half full glass usually raise these points: the positive results from some serious and well designed researches may indicate a possible hidden reality; emerging understanding of the mind and its non-local properties may explain the gap of distance; commitment to the patients' claims for a humanistic, comprehensive and integrative healthcare. We may cite two poles of ignorance and the balanced position related to the discussion of DH. The first pole is the obstinate skepticism (arrogant and prejudiced attachment to materialism), that denies the full half. The opposite pole is the naive mysticism (unrealistic trust on paranormal potentialities), that denies the empty half. The balanced position is called here the option for the open-minded scientificism. Some opportunities of advancement in this field would arise from these points: new and adequate research designs complying with limitations of the phenomenon; the progressive consolidation of a

new, post-materialist scientific paradigm; optimizing the efficacy of the phenomenon knowing better its interfering factors.

**Keywords:** Complementary Therapies, Mental Healing, Prayer Healing, Spiritual Therapies, Faith Healing, Metaphysical Mind-Body Relations, Holistic Health, Mind-Body Therapies

## 1. Introduction

*“The day science begins to study non-physical phenomena, it will make more progress in one decade than in all the previous centuries of its existence. To understand the true nature of the universe, one must think it terms of energy, frequency and vibration”* (Nikola Tesla, 1856–1943).

### 1.1. Motivation of authors

For a long time, the authors have had an interest in broader healing concepts than those of conventional biology and medicine. What has inspired the authors is the occasional observation of some health outcomes that do not follow an expected pattern. On the one hand, there are people with chronic health problems that suddenly, following some simple intervention, have an unexpected improvement. On the other hand, there are people with simple health problems who do not improve even after getting every conventional care available. The easiest path would be to put these events in the account of the placebo effect or unknown genetic variations. But the authors are attracted to the more difficult path, in which unknown potentialities of the human being collaborate to determine its state of equilibrium.

Four years ago, the authors began to be interested in the phenomenon of healing from a distance. This is an intriguing phenomenon, because the components of the easy route described above are not in play. Distant healing could only be explained by elements not yet described by science. Saint Augustine said that miracles do not happen in contradiction to nature but only in contradiction to what we know of nature. In the same spirit, the authors have searched in the scientific literature for extraordinary phenomena reports, as well as data to support theories to explain them. This work has been a bit frustrating because the information available form a puzzle in which many pieces are missing.

The authors decided that an ultimate model that is fully understood scientifically cannot still be mounted. At the same time, they have the conviction that the gaps of an imperfect model can be overcome with goodwill and the benefit of doubt. The authors engaged in gathering information found in a logical and orderly way so that readers can draw their own conclusions. There are arguments against and in favor of the existence of unexplored human potential, consistent with the events of healing from a distance. In particular, the authors think that in the near future, medicine will recognize that its progress will involve going through these fields.

Each one of us, at some point in life, may have experienced the situation of a beloved person in difficulty, maybe affected by a severe disease. In such moments, we feel helpless and feel the need to share with this person our deepest resources. Our cultural background may determine whether this attitude will assume the format of a prayer or a secular engagement in sending to this person our best intentions. But despite these exceptional situations of personal desperation, there are descriptions of techniques for health purposes based on the supposed power of compassionate intentionality.

## **1.2. What is known and gaps of knowledge**

Distant healing (DH) techniques are defined as acts of conscious intent, wish, or focus, dedicated to improve the health or well-being of another person who is far away [1]. Such approaches for health purposes, described for thousands of years and called by different names, are maybe the oldest ancestral curative practice, present in virtually all cultures worldwide throughout recorded history [2]. Examples include techniques from structured systems (such as distant Reiki) to nonstructured actions (such as informal healers); from ancient shamanistic traditions to modern civilized developments; from laic visions to religion-rooted rituals; from familiar initiatives to professional consultancy.

Perhaps the most widely used DH intervention is intercessory prayer (IP). This is a form of prayer characterized by petitions on behalf of others for their health and well-being [3]. Intercessory prayer is advocated by many religions and philosophies and involves an effort on behalf of someone who is with a special need, aiming to alleviate disease and promote health. Especially in the monotheistic traditions, a prayer is a dialog between man and God (or His messengers). But the term "prayer" used in the current text is broader than the one from main Western religions. Here, it means any concentrated mental effort to conduct the reality to a wished outcome, by appealing to a force which may not be religious. Sometimes, this action is done far from the target beneficiary, when it may be called distant intercessory prayer.

Regarding self-prayer or healing techniques before the presence of a practitioner, the changes in health parameters are explainable by mind–body pathways. Plausible mechanisms by which such techniques deliver health benefits include relaxation response, placebo effect, expression of positive emotions, improved coping strategies from certain spiritual beliefs, and feeling of psychosocial support [4]. All these mechanisms may be related to better physical and mental balance. But a problem arises when considering DH techniques. For the present text, the word "distant" means that the two parts are shielded from any kind of ordinary physical and psychological influence, including those from sensory, informational, and electromagnetic natures [5]. Even thousands of miles of separation do not appear to limit the beneficial effects of healing or prayer [6]. Obviously, such a situation excludes the placebo effect.

For the issue of DH to be properly analyzed, it is necessary to separate the study of the CAUSES (the mechanisms involved in the DH phenomenon) and the EFFECTS (what can be observed in the recipient's body). The first item is the most obscure. Currently, there is a lack of a universally accepted theory that would constitute the base for the DH paradigm. DH appears to contradict our ordinary sense of reality and the laws defined by Newtonian science. The observations point to the existence of a subtle interconnection between living beings, a

phenomenon not constricted to the known laws of cause and effect, in ways that go beyond ordinary sense perception. Some fundamental issues about the mechanisms of DH remain non-responded: What is the source of healing and the pathway by which it is transmitted to the client? What is it that is precisely being transmitted or channeled or worked with? What do exactly practitioners do when they perform healing? and What is required of the client in order to receive healing [7]?

The second element regarding DH and its effects may receive another consideration. Although many of the studies about distant influence are not well designed, there are also some serious and well-controlled researches. In such cases, the results cannot be explained by chance or coincidence, natural internal rhythms, uncontrollable external stimuli, errors on recording or reading the registries, placebo effect, or systematic changes in the studied phenomenon [8]. Many researchers studying distant IP used methodologies designed to rule out the possible influence of psychological variables or placebo effects, including double-blinding procedures and control group (prayer vs. no prayer) [9]. Under such conditions, there is documentation that intentions of one person can remotely influence mental and body functions of another person, interacting with his/her physiological, psychological and/or behavioral status. But the effects are not restricted to person-to-person interactions, and distant intention has also influence in other biological systems.

Remote interference of human intention over living systems has been documented over gene functions, such as cell division (which reflects DNA synthesis), cell differentiation, mutagenesis, and apoptosis [10]. Significant effects of mind intentionality are demonstrated through randomized-controlled trials in the germination of seeds, and the growth of plants has also been described [11, 12, 13], as well as over simple life forms such as cells, bacteria, yeast, and the kinetics of biochemical reactions [14, 15, 16]. Considering complex beings interactions, a study [17] examined the effects of IP over wound healing in bush babies, primates with chronic self-injurious behavior. All animals were treated with dietary L-tryptophan, and some also received IP (daily for 4 weeks). Prayer-group animals showed significant differences from the standard group: (a) greater reduction in wound size; (b) better physiological parameters associated with wound healing: red blood cells, hemoglobin, hematocrit, mean corpuscular hemoglobin, and corpuscular volume; (c) better behavioral parameters associated with wound healing: a reduction in wound grooming and total grooming behaviors.

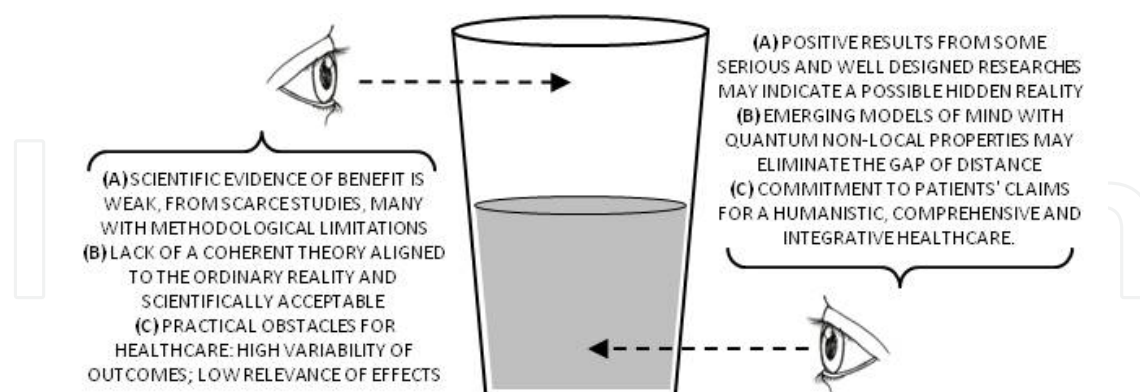
In humans, a variety of physiological effects can be modulated in transpersonal transmissions, known as telesomatic interactions [18]: they consist of physiological changes triggered in a targeted person by the mental processes of another. The effects are detected, especially in both the central and peripheral nervous system. Upon the brain, many studies showed that the status of a subject "A" (either sending intentions or being stimulated) produces changes over the electroencephalogram or the functional magnetic resonance activity of an isolated and distant subject "B" [19, 20, 21, 22, 23, 24, 25]. Upon the autonomic nervous system, there is an observed effect of distant intentions on the electrodermal activity of another subject, in a small but significant effect size [26]. Besides these physiologic modulations, there is also a documented positive effect in performance capabilities, such as the effect of benevolent intentions over the mind focus of a remote person during a specific task [27].



### 1.3. Is the glass half full or half empty?

The above citations, though exciting, are a minority among many other studies with negative results. Research to investigate the health benefits of receiving prayers from distant intercessors produced conflicting results [28]. A major problem is that positive results in these studies are very unpredictable, probably due to unknown and uncontrollable variables, either related to the practitioner and the beneficiary. With the available data, it becomes difficult to formulate a unique opinion about the validity of such techniques in healthcare. The body of knowledge about DH is a collection of information, each one with defects and qualities, strengths and weaknesses. Given these contradictory possibilities, someone could focus more on one or other side, and yet he would be right. If one prefers to work only with what is concrete and guaranteed, this person will say that there is no evidence enough on DH even for it to be taken seriously. If someone else believes that the advance of knowledge goes through unexplored areas, this person will say that this matter should be thoroughly discussed.

The question "Is the glass half empty or half full?" is a common expression, generally used rhetorically as a challenge for an individual's worldview. This idiom is used to explore how people perceive events and objects. The purpose of the question is to demonstrate that one situation may be seen in very different ways depending on personal background. In any situation, there may be opportunity as well as trouble. Perception is subjective to each individual and it is simply his/her interpretation of reality. Thus, the preference to see a half full or a half empty glass illustrates one's psychological and philosophical worldview regarding pessimism or optimism. The question of DH may be put under the frame of the "half full/half empty" perspective. Based upon previous personal values, anyone may choose to see the problem in a positivist or a negativist optic. Figure 1 shows the arguments for both interpretations, which will be discussed as follows.



**Figure 1.** The question of DH under the frame of the "half full / half empty glass" and the main arguments for both interpretations

People who look at the issue of DH and see a "half empty glass" usually raise the following points: (A) the scientific evidence of benefit is weak, from scarce studies, many of them with methodological limitations; (B) there is a lack of a coherent theory aligned to the ordinary reality and scientifically acceptable; and (C) practical obstacles for healthcare include high

variability of outcomes and low relevance of clinical effects. On the other hand, people who see a “half full glass” usually raise the following points: (A) the positive results from some serious and well-designed researches may indicate a possible hidden reality; (B) emergent models of the mind with quantum non-local properties may eliminate the gap of distance; and (C) the commitment to the patients' claims for a humanistic, comprehensive, and integrative healthcare. All these points will be discussed below.

## **2. The empty part of the glass**

### **2.1. Poor evidence of benefit**

Evidence-Based Medicine, at its introduction in 1992, was defined as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients” [29]. A main impediment to the acceptance of DH techniques as established forms of therapies has been its seeming irregular reproducibility on empirical research. In fact, clinical trials on DH therapies produce variable results. At least for distant intercessory prayer, the most studied modality, there is no scientifically discernible effect over health. The omnibus effect size across studies, at best, has borderline statistical significance [9]. Roberts et al. [30] reviewed thoroughly the effects of intercessory prayer as an additional intervention to healthcare. Overall, they found no significant difference in recovery from illness or death between those prayed for and those not prayed for. They concluded that, although some of the results of individual studies suggest a positive effect of IP, the majority does not, and the evidence does not support a recommendation either in favor or against the use of IP.

Ideally, any health intervention should be tested by randomized-controlled trials. Science is the backbone of our medical practice. Evidence-based medicine places systematic reviews and meta-analyses at the pinnacle and excludes numerous sources of research information, such as basic research and epidemiology [31]. However, for most CT, there will never be adequate studies following this research model. Investigating CT following rigorous clinical research can be methodologically challenging. This approach is radically different from the experientially rich healing practices found throughout the world that presumably date to the beginning of humanity [32]. Some characteristics of complementary therapies make them less prone to be studied by randomized trials [33].

### **2.2. Lack of a coherent theory**

The most sensitive point of any argument about DH is to explain how any interaction may occur between two separated organisms. No model provides an ultimate explanation for the mechanism of action of DH. This gap reinforces the skepticism among scientists. Generally, most theories about DH systems are comprised of [34]: (a) a source which generates an emanation and modulates it in some manner such that it conveys information; (b) the transfer of a modulation factor or signal at a distance; (c) a transfer medium through which the curative element flows; (d) a terminal sink which includes a mechanism for the perception of information; (e) the ability of the beneficiary to tune in to this frequency and decode this modulation.

DH is the hypothesized form of healing intentionality occurring beyond the reach of the physical senses and that appears to be unmediated by any demonstrable form of physical signal [35]. Traditional DH theories were born in the past and reflect the worldview of that time. Even if they do not fit the current biomedical model, old theories have considerable value, although they may have some structural errors. In the past, conclusions were drawn from the intensive observation of nature, and they have insights we could not draw today. A way to recover this ancestral wisdom is to adapt their concepts to the contemporary knowledge, as a simple matter of language.

The traditional concepts of DH technique are often elaborate, transcending biophysical models and employing metaphysical terms, which don't correlate to conventional biologic concepts. Ancient traditions have explanations that involve manipulation of a supposed subtle vital elements, or intervention of invisible entities, such as spirits, saints, Christ, and even God. But all these interpretations have no correspondence to current scientific constructs. Many practitioners claim for the manipulation of some kind of subtle "energy". Virtually all ancient medical systems pose the existence of some form of vital principle, which determines life and health state. The nature of this supposed principle cannot be described in scientific field. Many DH techniques propose the activation or unblocking of patients' energies, projection of the practitioners' own energies, channeling of energies by the practitioner from nature (the earth, or cosmic energies).

Biofield is the name used for the supposed endogenous energy fields of the living biological bodies [36-37]. It is hypothesized to involve information for regulating homeodynamics. The biofield may act as a resonance target for external forms of energy used as treatment modalities in DH. The biofield would have functional role in the body's innate self-healing mechanisms, based on the concept of bioinformation which, mediated by consciousness, functions globally at the quantum level to regulate and heal physiologic processes. This model [36] is used to explain anomalies reported in the scientific literature, which cannot be explained by traditional biophysics and bioelectromagnetics. However, the analogies between these technical terms of physics and the concepts from DH models are inexact approximations. In physics, the term "energy" refers to "the capacity to do work and overcome resistance", and the term "field" refers to "a force which can cause action at a distance" [38].

Thus, this solution brings some embarrassment between defenders and opponents of DH. Firstly, because this "energy" is not currently detectable, albeit most current instruments of measurement are based on detection of electromagnetic signals. Secondly, the DH effects occur even in conditions of isolation between organisms by a Faraday cage [22], ruling out the participation of ordinary electromagnetic waves in the phenomena. We are limited to propose that, somehow, by an unknown mechanism, the intention of the practitioner reaches the beneficiary by a subtle connection medium.

### **2.3. Practical clinical obstacles**

When testing healthcare interventions, it is necessary to explore the concepts of efficacy and effectiveness [39]: Efficacy is the extent to which an intervention brings results under ideal circumstances, and its exploratory question is: "can it work?". Effectiveness refers to whether



an intervention brings results under usual healthcare practice, and its exploratory question is: “does it work in practice?”. The lack of uniformity on the patients’ responses to DH is responsible for many reports of bad results on researches. DH may work well for some patients while it doesn’t work at all for others. There may be factors determining these differences, which remain still unknown because they must be beyond the data obtained from randomized, double-blind clinical trials. So, the attempt to predict the benefit of DH for a specific person becomes a lottery.

In addition to the obvious limitation of DH due to the unpredictability of the results, there is another main obstacle: the effects of DH do not appear to be clinically relevant. In both healthy people and patients, there are promising results of DH modalities mainly over mild subjective symptoms such as anxiety, muscle relaxation, stress reduction, and well-being. Over pain, DH techniques may modestly help to decrease it, roughly 1 point on the 10-point scale [40]. In a randomized, blinded study [41], patients with cancer who received IP had small but significant improvements in spiritual dimension of well-being. For the small magnitude of its clinical effect, the feasibility of DH as a clinical treatment may be limited to collaborate with conventional treatment.

In fact, many negative results in clinical trials appear when the focus of the study is the rate of morbidity or mortality in patients with serious illnesses. A study [42] about effects of IP over status health of patients in an intensive care unit received many commentaries for its negative results. It was a multicenter, randomized controlled trial, seemingly very well designed. However, the premise was perhaps flawed, assuming that the intervention is so powerful that it would support clinical success in frail patients who underwent coronary artery bypass graft. The health outcomes in seriously debilitated patients may be determined by more concrete clinical elements than the subtle interference of DH. Thus, the term “cure at distance” may be a little ambitious. As DIP is not intended to treat a disease, but rather to improve general well-being, perhaps it would be more adequate to call it “*complementary health practice*”, instead of complementary therapy.

### 3. The full part of the glass

#### 3.1. A possible hidden reality

As Dossey [14] posed, the key question is not how large the effects are, but whether they exist at all. In other words, what matters is whether human consciousness can act non-locally to affect the material world, beyond the reach of the senses. Events that cannot be explained by existing science are regularly reported in high-quality scientific literature [44]. The inability of existing paradigms to explain these observations elucidates a need for more research [44]. Such findings invite us to consider a nonphysical aspect of reality. These phenomena are a calling for the emergence of a new paradigm [45]. Science advancement begins with observations which cannot be explained, in such manner that what is paranormal in one era can become mainstream science in another [44].

On the biologic field, the available data point to the existence of several levels of distant communication [46]: neuron-to-neuron (in vitro, isolated cells responding collectively to a stimulus), brain-to-brain (stimulus in one subject leading to physiologic changes in other one), and person-to-person (intention from one person leading to well-being in other one). Furthermore, on this astonishing field, there are also some studies about mind–matter interaction besides the biological interest. Such experiments about consciousness-related physical anomalies brought the verification that the mind exchanges information with the environment. Mind interference over machines generating random effects has been studied [47, 48, 49]. In such research, an operator tries to exert some mental influence on an external system to achieve a specific desired outcome. They concluded that human intention is able to elicit anomalous variations on random event output in a very small size but statistically significant effect. The replicability of results is irregular in ordinary trials, but statistically robust over large databases.

Although the positive data are not unanimous in studies of DH, these outcomes cannot be viewed as anomalous or as exceptions to natural laws. Instead, they call our attention to a dimension of reality yet to be explored, which need a broader explanatory framework. The increasing knowledge on this subject will dictate what role these phenomena can play in our lives. Anyway, the academic medical centers should seek new knowledge concerning therapeutics, irrespective of the source of the original hypotheses. Scientific research centers exist for the purpose of the generation, conservation, and dissemination of new knowledge concerning the causes, prevention, and treatment of human disease. Thus, they should go on rigorously investigating such a widely used treatment modality, the IP [50].

### **3.2. Emergent nonlocal mind model**

Quantum mechanics, the physics of subatomic particles, is commonly said to be a theory applicable for submicroscopic level. Nearly all physicists, though, think it applies to everything, no matter what the size [51]. Quantum effects may be not limited to subatomic particles. These effects are perhaps more pervasive, and some evidence points toward quantum physics applicable to the macro world. Many experimentalists have seen quantum effects in a growing number of macroscopic systems. The quintessential quantum effect, entanglement, can occur in experiments with large systems, and it may even operate in the cells of living systems [51]. Physicists thought the bustle of living cells would blot out quantum phenomena. Now they find that cells can nurture these phenomena—and exploit them [51]. Nonlocal consciousness, in which the intention of the practitioner may connect to the mind of the beneficiary, is an alternative explanation for some of the effects [52].

The quantum mind hypothesis proposes that quantum mechanical phenomena, such as quantum entanglement and superposition, can explain nonlocal consciousness. In quantum mechanics, the term non-locality describes effects of spatially separated particles. Non-locality [35] is the state of being unconfined and unrestricted to a particular place. In modern physics, it is a property in which entities once in contact demonstrate correlated behaviors, instantly and to the same degree, regardless of the extent of spatial separation. Entanglement is the concept in which separated particles can still remain connected, with the state of one particle

affecting the state of another. By analogy, the term “biological non-locality” would refer to correlations between spatially separated living beings. In fact, telesomatic interactions mean to have the characteristics of quantum non-locality [53]: they are unmediated (not propagated by any known form of force, energy, or signal); unmitigated (strength of the effect doesn’t diminish with increasing spatial separation); and immediate (correlations take place with no time delay).

An approach in this direction [54] proposes quantum computations in microtubule networks embedded within gap junction-linked cortical dendrites. According to this theory, consciousness depends on biologically orchestrated coherent quantum processes in microtubules within brain neurons, and these quantum processes correlate with, and regulate, neuronal synaptic and membrane activity. This theory suggests that there is a connection between the brain’s biomolecular processes and the basic structure of the universe.

Mind could operate in a nonlocal fashion, being unconfined to specific points in space, such as brains and bodies [55]. Thus, we could receive information without the use of ordinary senses, in ways that transcend the habitual space and time constraints. Instead of energy exchange, there may be an exchange of information of biological interest, in a subliminal way. Information, in the present context, means any array of stimuli to which consciousness or its environment is capable of sensing and reacting [35]. A form of information transfer is due to resonance, which is the inducing of a synchronizing effect in a beneficiary. It is conjectured that the information content transferred by the practitioner may create a resonance phenomena within the beneficiary [34]. It is also possible that the healing potential is not emitted. Maybe the only element that travels from the practitioner to the beneficiary is the pure intention. Healing potential may already be present in the beneficiary, and it is then only awakened [56].

### 3.3. Humanistic healthcare

Paradoxically, modern medicine understands more the serious diseases than the minor functional deviations. Current conventional model best explains mechanical (material) problems, but has gaps to explain functional disorders (which are actually related to most of the medical appointments). If we imagine the human being as a computer, the current biomedical model would better take care of the hardware, whereas it has few resources to fix the software. Somatic pathology, in many cases, is due to subtle imbalances, since the ideal health results from an integrated state. DH techniques may serve to strengthen or reinforce the client’s resources to enable one to withstand pathogenic exposures or threats, thus ameliorating susceptibility to disease and/or facilitating recovery, to correct a slight pathological deviation and to restore balance and wellness. DH may empower one’s innate salutogenic resources, complementing the treatment of the disease process made by conventional medicine [57].

The World Health Organization defined health as a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity [58]. By this definition, conventional medical treatment, in its strict sense, would not encompass everything the patient needs to balance his/her health. As a result, many patients currently show dissatisfaction with characteristics of conventional medicine. In this scenario, complementary therapies have

become an attractive option for some people, play a role in filling this gap by correcting the deviated pathway [59]. DH techniques are part of the so-called holistic therapies, as such activities consider the whole person, including physical, mental, emotional, and spiritual aspects.

Although clinical studies of DH have yielded equivocal results, this is one of the most frequently practiced healing modalities. Prayer is probably the best-known and widely practiced form of DH in the western world [60]. Even small clinical effects derived from DH are noteworthy for many people. Patients with debilitating symptoms will not wait until unquestionable evidence is available; they tend to try CT regardless of the uncertainties associated with it. DH modalities may be chosen by patients, challenging the physician to conciliate the expectations of patients with the lack of solid evidence, in an ethical counseling. So, medical community has the ethical and moral obligation to accompany the patient in his search for relief. The “north” cardinal reference must always be the “*primum non nocere*” (first, do no harm) principle. But the “south” must be the principle of “put yourself in someone else's shoes”, remaining sympathetic and respectful to the aspirations and desires of the patients [61].

Harding [62] asks whether there is no place in medicine for a multiple approach to healing, and, further, if reported studies of efficacious prayer therapies are meaningful, are physicians not using these additional treatments withholding something curative from their patients? The IP findings are strong enough to accept them and incorporate them into medical practice. DH would be used even without solid evidence of efficacy if the condition causes a heavy burden of suffering. Adequate physician characteristics include partnership on a real patient-centered care, respecting the values of the patient. We would use more IP studies even if we don't understand the underlying mechanisms. This situation is similar to the case of scurvy and its treatment by consumption of citrus fruit long before we understood the role of vitamin C [63].

#### **4. Two poles of ignorance and a balanced position**

Attitudes to medical literature can create belief systems which are analogous to those of religious traditions [64]. In science as in religion, there are fundamentalist, conservative, or liberal people. Such variations reflect the different ways of reading the data and the disparity in the value placed on the evidence. Whether a scientist takes a fundamental or liberal view of available evidence will affect how he/she interprets it [64]. In both the religious and medical context, debate difficulties (either on scriptures or evidence) arise when attitudes become polarized in an atmosphere of intolerance, denying the validity of alternative world views.

According to this analogy [64], fundamentalist scientists take a strict and literal view of the literature. They give little allowance for individualization, ignore the limitations of the literature, and tend to undervalue nonrandomized papers. The fundamentalist approach sees the literature as sacred texts to be applied literally, and any deviation is seen as heresy. On the other hand, a liberal approach sees the literature as a guide to establish principles to be adapted to specific situations. However, an excessive liberal perspective would result in important deviations from the evidence. Summing up these erroneous positions, we would say that



acceptance without criterion is characteristic of blind mysticism, whereas rejection without criterion is characteristic of blind skepticism.

The famous British physicist and cosmologist Stephen Hawking stated: the greatest enemy of knowledge is not ignorance; it is the illusion of knowledge. A conservative scientific position employs observation, empirical investigation, and theoretical explanation of each phenomenon. Figure 2 represents what we call here the two poles of ignorance and the balanced position related to the discussion of DH. The first pole is the obstinate skepticism (arrogant and prejudiced attachment to materialism), that denies the full half. The opposite pole is the naive mysticism (unrealistic trust on paranormal potentialities), that denies the empty half. The balanced position is the option for the enlightened scientificism, a non-dogmatic, open-minded method of acquiring knowledge about nature.



**Figure 2.** Representation of the two poles of ignorance (the obstinate skepticism and the naive mysticism), and the balanced position

#### 4.1. The option for obstinate skepticism

Many people ridicule DH even before collecting all information for a critical analysis, in a position like “I didn’t read it and I didn’t like it”. Prejudice and disinterest from some scientists are ingredients to creating a comfort zone of sloth. Skepticism may be healthy and constructive when it is a careful doubt until enough data have been collected to draw a conclusion. But the unhealthy and destructive form of skepticism is manifested by a dogmatic insistence in a particular conclusion in absence of data, and denial of findings that contradict that conclusion [65].

Some materialistically inclined scientists and philosophers refuse to acknowledge these phenomena because they are not consistent with their conception of the world. But science should not be committed to any particular beliefs, dogmas, or ideologies. The term “paradigm paralysis” [66] refers to the tendency to be unable to see beyond the current models of thinking. To justify their attachment to conventions, these scientists usually claim their commitment to evidence-based medicine, as if it is the pure expression of the true.



Evidence-Based Medicine is a useful tool, but has drawbacks when used in isolation in the practice of individual patient care. The authoritative aura given to the “best available evidence” may lead to inappropriate guidelines or doctrinaire dogmas for clinical practice. Many criticism to evidence-based medicine have been raised [67, 68, 69], and the main are: definition of “evidence” is narrow and excludes important information; limited usefulness of applying populational conclusions to individual patients; ignores the autonomy of the doctor/patient relationship and patient preferences; being a “cookbook” in medicine, giving an average overview; under-valued issues such as rare diseases, clinical circumstances, and surgeon expertise; discrepancies in health care systems worldwide.

#### **4.2. The option for naïve mysticism**

Acceptance of anything without checking the source, with free association of smithereens from scientific idiom, may generate “mumbo jumbo” stuff such as “quantic weight loss”. This attitude, on the verge of charlatanism, may be motivated either by greed or by ignorance. Ideally, practitioners must be adequately informed, motivated, and expectant. An example of realistic purpose may be the pursuit for well-being; an unrealistic purpose may be the intention to stop all conventional remedies in a chronic disease; and an impossible purpose may be to cure advanced cancer. The challenge of the correct expectation may also include the user behavior. Patient may seek a practitioner for wrong motivations, as a shortcut to resolve problems.

Any harmless complementary therapy is welcome as a support for medical approach. But its nemesis, the concept of alternative therapy, may be very dangerous when it means a substitute for conventional treatment. This path may lead to consequences, ranging from disappointment to retardation of clinical investigation in serious diseases. This disaster may happen when some practitioners, making exaggerated claims about curing diseases, ask their clients to abandon the medical follow-up. Whereas direct harm to the patient is virtually impossible with DH, an indirect harm is possible to occur, which results in a delay of appropriate treatment. Also, unreasonable expectations may discourage patients and their families from accepting and dealing effectively with their medical conditions.

#### **4.3. The option for enlightened scientificism**

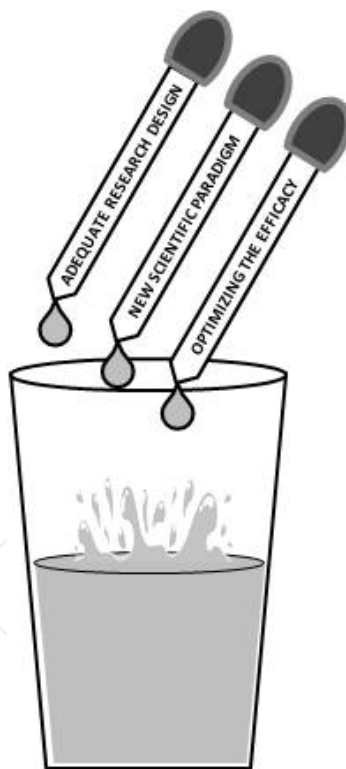
The word science derives from a Latin verb, “*scire*”, meaning to know or to understand; it could thus properly apply to any process of comprehension of any topic or form of experience. True science is characterized by thorough and respectful cognizance of relevant past and present work by others, humility in the face of empirical evidence, openness of mind to new topics, new approaches, new ideas, and new scholars; and a profound respect for demonstrable experimental and theoretical anomalies [70].

The dedicated scientist does not discard what is proposed by other theories, including ancient philosophical or religious doctrines. Supposed subtle fluid and/or invisible intelligent entities could naturally coexist with the physical nature. It would make sense to infer that both tangible and intangible realities could be supplemented by information from each other. We must

respectfully consider any nonphysical and transpersonal aspect of reality that would contribute to a broader explanatory framework. Open-minded scientists may see comprehensively all the aspects of the glass in a naturalistic point of view. In such context, the answer of whether a glass is half full or half empty would be: the content of the vessel is 50% of its capacity; the glass is both half full and half empty. The enlightened scientificism comprises the acknowledgment of the potentials of DH as well as its limitations.

### 5. Further sources to fill up the glass

Some opportunities for advancement in this field would arise from the following points: (A) new and adequate research designs complying with limitations of the phenomenon; (B) the progressive consolidation of a new, Post-Materialist scientific paradigm; and (C) optimizing the efficacy of the phenomenon knowing better its interfering factors. Figure 3 illustrates such sources from which the question about DH will be reinforced. Each item will be discussed below.



**Figure 3.** Sources from which the question about DH will be reinforced

#### 5.1. Adequate research designs

Even in controlled and blinded experimental designs, many interfering factors would not be completely isolated. Main scientific biases have been cited [71, 72]. The most important is

probably the difficulty for creation of a pure control group, without intervention. The relatives of the beneficiary may be praying for him/her, and there are anonymous benefactors who pray for the restoration of the sick people in general. Studies of IP fail to adequately measure and control exposure to prayer from others, which is likely to exceed IP and to vary widely from subject to subject, and whose magnitude is unknown [63]. This supplemental prayer greatly attenuates the differences between the treatment and control groups. Another important bias may be the quality assurance of the prayer offered. At least for prayer, it is said that its power is related to intention, motivation, focus capacity, compassion, empathy, sincerity, commitment, and trust [73]. In a study with many practitioners, the uniformity of the intervention may be compromised. A speculative bias would include the artificiality of the environment for the experiment and its possible interference with the subtle phenomena it would intend to capture.

Future scientific studies must comply with limitations of the technique, by the creation of suitable models to study this phenomenon. As a rule, studies in complementary therapies would follow a different dynamic from that of studies with drugs. It makes no sense to study remote IP as if it were just another drug [72]. Further research must be conducted in different molds. Research designs more adequate for complementary therapies include [74]: Pragmatic trials (intervention intended to represent the real world to enhance external validity); factorial designs (comparing single modalities to a combination of modalities); preference trials (respecting treatment preferences of participants); and "N-of-1" (a single patient trial with multiple crossovers between treatment and placebo).

The worship of a particular research method (such as the randomized controlled trial) and a dogged determination to employ it, in spite of its shortcomings, has been called "methodolatry" [46]. There is a need to critically reappraise core elements of the evidence-based medicine paradigm: the hierarchical ranking of evidence, RCTs or systematic reviews as the gold standard for all clinical questions or situations, the statistical tests that have become integral to the "measurements" for analyzing evidence, and reincorporating a role for evidence from basic sciences and pathophysiology [75]. To provide patients with best care at lowest cost, EBM must balance priorities by [76]: expanding to include new methods of study design and integration; adapting to the needs of both patients and the health care system; dealing with the need for individualized care, incorporating patient values.

Future research to accelerate the progress of understanding the source and the biological effects of DH must focus on [77]: (a) clarifying the scientific hypotheses and developing further theories to resolve questions of mechanism of action; (b) developing preclinical models (cell, tissue, animal) to validate their biological effects and mechanisms of action; (c) validating markers attesting to the biological effects, such as biomarkers associated with stress and relaxation response; (d) investigating at least as a shadow or a trace of bioelectric signaling, as the purported phenomenon cannot be directly measured; and (e) clarifying practical issues, such as characteristics of the practitioner and potential interfering factors (e.g., empathic resonance).

## 5.2. New scientific paradigm

Scientific ideas are subject to change, for the process for producing knowledge brings new observations, which may challenge prevailing theories. In science, improving and occasional discarding of theories, whether new or old, go on all the time [78]. The improvement of ideas, rather than their outright rejection, is the norm in science. For example, in formulating the theory of relativity, Albert Einstein did not discard the Newtonian laws of motion but rather showed them to be only an approximation of limited application within a more general concept [78]. A paradigm is a set of assumptions, concepts, and beliefs that define the way we frame our thoughts. Paradigms shape the way we see, and cause us to notice some things and ignore others and to anticipate what is likely to occur based on a particular set of assumptions. The development of a new paradigm demands a learning to "think outside the box" (i.e., outside the prevailing paradigm).

Studies already indicate that we can mentally influence living organisms at a distance, and that intention can influence the state of the physical world in a nonlocal fashion. So, many contemporary scholars and researchers believe a transition is currently required in science, because the materialistic focus that has dominated it in the modern era cannot account for an ever-increasing body of empirical findings in the domain of consciousness and spirituality. Some of these scientists signed the Manifesto for a Post-Materialist Science [55]. Their purpose was to discuss the impact of the materialist ideology on science and the emergence of a new paradigm for science, spirituality, and society.

As they argued [55], the nearly absolute dominance of materialism in the academic world has seriously constricted the sciences and hampered the development of the scientific study of mind and spirituality. In the view of these scholars and researchers, science methodology is not synonymous with materialism. The true spirit of scientific inquiry is that empirical data must always be adequately dealt with. Data which do not fit favored theories and beliefs cannot be dismissed a priori. Such dismissal is the realm of ideology, not science. According to these authors, it is time to free ourselves from the shackles and blinders of the old materialist ideology, to enlarge our concept of the natural world, and to embrace now a post-materialist paradigm.

## 5.3. Optimization of the efficacy

The more we know about the interfering factors involved in DH outcomes, the more we can set the conditions to induce the positive result. However, it is very difficult to investigate such factors, as they may be more subjective than the scientific methods could detect. Some factors are traditionally cited, and they will be described as follows. Practitioner-beneficiary emotional connection seems to be an important factor, since telesomatic interactions occur more clearly among emotionally close people, such as identical twins, couples, or relatives [56]. The studies in DH and IP reveal that nonlocal mind is intimately connected with love, compassion, and deep caring, just as healers throughout history have maintained [79]. Thus, the starting point for a favorable DH outcome would be a practitioner with appropriate empathy, focus, and

motivation. The practitioner mentally focuses the receiver, establishing a figurative connection that will transfer his/her healing intention.

There are no clues about the role of the practitioner's background elements (such as the kind of graduation; amount of experience; etc.). Thus, we could infer this is not a decisive factor. Maybe the correct attitude of the practitioner is more important than his/her background. Some ethical posture items from healers have been suggested [60]: do not promise something (either relief or cure); not working in competition with medical treatments; not tempt a client to delay or omit a medical consultation or treatment, to interrupt or stop it; not recommend any drugs and give no advice to stop taking a drug; not giving any diagnosis; not enter into sexual relationships with my clients; not put pressure on clients to begin or continue the healing process; not using misleading titles; not charge money in advance for healing sessions.

These moral elements seem to be more important than the faith tradition of the intercessor or either the format of the prayer [7]. DH research did not show that prayers within any particular religious framework are more effective than any other, or than secular DH practitioners [6]. The experiments in nonlocal healing show that the prayers of all religions appear to be effective [15]. Even secular intentions that are not associated with any traditional religion, appears to result in healing [15]. These findings universalize healing intentions and nonlocal effects of prayer to all systems. The use of a formal technique or a religious routine may only serve as a support to fasten the practitioner thought, for the unbroken conduction of the task.

The level of wellness and health state of the practitioners may interfere with the process. Their physical and mental well-being, states of wholeness and balance that they seek to engender in their clients, can affect the outcomes. Rubik et al. [80] measured the effects of Reiki treatments on heat-shocked bacterial cultures and, secondarily, the role of the practitioner well-being. Reiki improved growth of bacteria in a healing context. Reiki-treated cultures overall exhibited significantly more bacteria than controls, but the level of well-being social, physical, and emotional of the practitioners correlated strongly with this outcome. For practitioners with a higher level of well-being, Reiki-treated bacterial counts were likely to be higher than control counts. The inverse result occurred for practitioners with diminished well-being.

Another concept, purely speculative, involves the receptiveness of the beneficiary on his/her healing process. DH techniques can produce effects even when the beneficiary is unaware that the effort is being made [15]. However, it is possible that the beneficiary could block the benefit, either consciously or unconsciously, for secondary gains of illness or due to personality types. At least to some degree, the beneficiary must desire or be motivated to be healed, keeping receptive openness, with minimal mismatch of impedance. As stated by Roman philosopher Seneca (4bC-65aD), it is part of the cure to wish to be cured. In a study [81], a prayer intervention reduced the subject's level of concern only for the subjects who initially believed that the problem could be resolved. Those in the intervention group who did not believe in a possible



resolution to their problem were not different from controls. Among those with a higher belief in prayer in the intervention group, a better physical functioning was observed.

## 6. Conclusion

### 6.1. Summary of the main points

Currently, there is a lack of a universally accepted theory that would constitute the base for the DH paradigm, and some fundamental issues about the mechanisms of DH remain non-responded. Even so, there is sparse documentation that intentions of one person can remotely influence mental and body functions of another person. With the available data, it becomes difficult to formulate an opinion about the validity of such techniques in healthcare. The question of DH may be put under the frame "Is the glass half empty or half full?".

People who look to the issue of DH and see a half empty glass usually raises these points: Scientific evidence of benefit is poor, from scarce studies, many of them with methodological limitations; There is a lack of a coherent theory aligned to the ordinary reality based upon Newtonian science; Practical obstacles for healthcare include high variability of outcomes and low relevance of clinical effects. People who look to the issue of DH and see a half full glass usually raises these points: the positive results from some serious and well-designed researches may indicate a possible hidden reality; emerging understanding of the mind and its nonlocal properties may explain the gap of distance; commitment to the patients' claims for a humanistic, comprehensive, and integrative healthcare.

We may cite two poles of ignorance and the balanced position related to the discussion of DH. The first pole is the obstinate skepticism (arrogant and prejudiced attachment to materialism), that denies the full half. The opposite pole is the naive mysticism (unrealistic trust on paranormal potentialities), that denies the empty half. The balanced position is called here the option for the open-minded scientificism. Some opportunities of advancement in this field would arise from these points: new and adequate research designs complying with limitations of the phenomenon; the progressive consolidation of a new, post-materialist scientific paradigm; optimizing the efficacy of the phenomenon knowing better its interfering factors.

### 6.2. Closing considerations

The fragmentary reasoning of the present paper does not constitute an ultimate explanation. The affirmations posed here are contestable, if analyzed separately. However, taken as a whole, the sum indicates a possibility to conciliate the scattered data and at the same time overcome their apparent contradictions. The present text doesn't have the intention to deny or to confirm any interpretation. Nor does this paper have the presumption to present an ultimate dictate to close the discussion. The objective of this chapter is to expose different views that lead to the acceptance or refusal of assumptions regarding DH. The acceptance of DH is still a jump of faith. But it may be a rational faith.

## Author details

Marcelo Saad<sup>1,2\*</sup> and Roberta de Medeiros<sup>3</sup>

\*Address all correspondence to: [msaad@uol.com.br](mailto:msaad@uol.com.br)

1 Medical Spiritist Association of S. Paulo, S. Paulo, Brazil

2 Medical College of Acupuncture of S. Paulo, Brazil

3 Centro Universitário S. Camilo, Brazil

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