Implications of non-conventional treatments for a *best-fit* model of consciousness in "healing"

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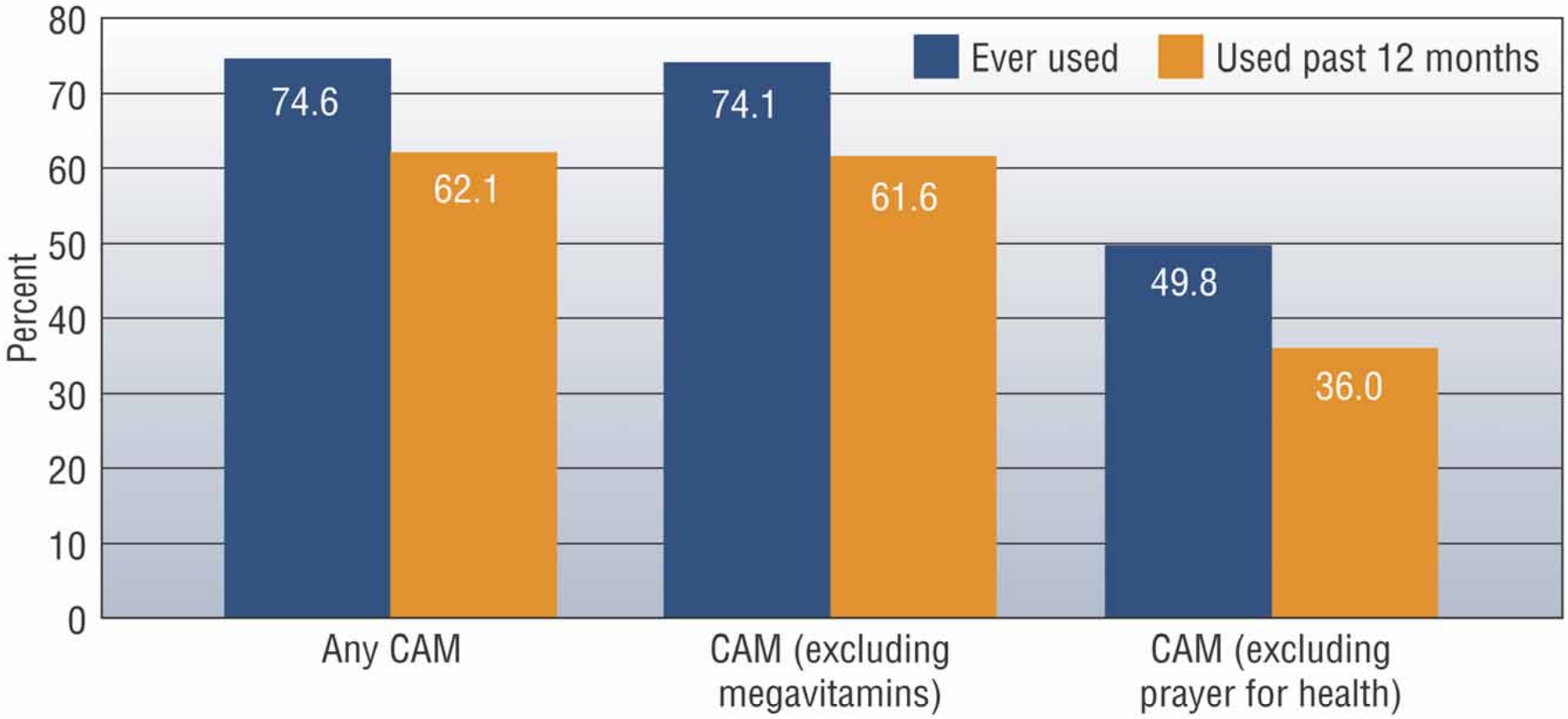
Widely shared belief in efficacy of prayer

- More than 80% of Americans believe that their prayers, thoughts and “directed” intentions can *cause* healing (Astin 2002)
- 75% of family practice doctors believe that prayer results in beneficial changes in health (Astin et al. 2002)

Prayer and “healing intention”

- Prayer and other forms of “healing intention” including meditation, qigong, reiki, ritual healing ceremonies, and others are among the most widely used non-conventional approaches in the U.S. to self-treat or treat the range of medical and psychiatric disorders.

CAM Use by U.S. Adults—2002



Source: Barnes P, Powell-Griner E, McFann K, Nahin R. CDC Advance Data Report #343. Complementary and Alternative Medicine Use Among Adults: United States, 2002. May 27, 2004

....So...what is going on and where to go from here?

- Philosophical issues
- Non-conventional therapies that use *directed intention* or *"subtle" energies*
- Studies on healing intention
- Building a *best-fit* model of consciousness in "healing"
- Proposed experiments to test *best-fit* model

Definitions

- **Intention**—mental state of *intense absorption* in a particular task
- **Healing intention**—intention "directed" at another person or animal with goal of alleviating suffering (prayer, meditation, traditional approaches)
- **Distant healing intention (DHI)** —healing intention "directed" at another person over a distance that rules out direct perception or beneficial effects of physical touch.

Two *types* of prayer

- **"Prayer"** refers to a request made to a loved one or a traditional healer requesting that intention be *directed* at the patient with the goal of "causing" clinical improvements in a specified health problem.
- In **"Intercessory prayer"** the patient asks a loved one or traditional healer *to pray for God to intercede* on his or her behalf with the goal of improving a specific medical problem.

Philosophical issues

Philosophical issues 1

- "Way of knowing" determines value of evidence and biases research design (epistemological issues are fundamental to discussion of role of consciousness in healing)
- In allopathic medicine, a *disorder is present when a recurring pattern of symptoms or signs can be demonstrated to be causally linked to an identifiable pathogen, disease process, or stress*.

Philosophical issues 2

- In many non-allopathic systems of medicine, understandings of *illness* rely on both empirical and non-empirical (ie, *intuitive*) information.
- Non-allopathic systems of medicine based on radically different *assumptions* about the nature of the human body in space-time, the roles of biological, psychological and *spiritual* factors in illness and health, and the role of consciousness (*intention*), or postulated “healing energy”

Starting points

- **Assumption:** *directed intention* and *healing intention and "subtle energies"* are different terms used to describe the same fundamental property (or "quale") of human consciousness.
- **Hypothesis:** intention is a fundamental property (or "quale") of human consciousness and plays a central role when beneficial outcomes take place in the context of many *conventional* and *non-conventional* treatments of physical and mental illness.

Healing intention research—findings to date

Trends

- Meta-analysis findings *inconsistent* (early studies methodologically inconsistent—different methodologies yield different findings)
- basic issues in research methodology continue to be debated in the research community
- Most studies on medical disorders (diabetes, heart disease, HIV/AIDS, brain tumors)
- Few studies on psychiatric disorders (depression, anxiety, alcohol abuse)

DHI-Systematic review

- **POSITIVE**
- A systematic review of 23 controlled trials of different healing approaches concluded that beneficial outcomes are reported almost 60% of the time when distant healing intention alone is employed to treat a particular medical or psychiatric disorder (Astin et al 2000).

DHI-Systematic review

- **POSITIVE**
- A systematic review of 21 studies of distant healing identified 12 studies on with adequate design and controls demonstrating significant beneficial effects on humans, animals and microorganisms (Benor 2001).

DHI-Meta-analysis

- **NEGATIVE OR INCONCLUSIVE**
- However, findings of other systematic reviews with more rigorous inclusion criteria suggest that distant healing intention does not result in beneficial effects on health (Ernst 2003, Aviles 2001) .

Intercessory prayer—meta-analysis

- **POSITIVE**
- Meta-analysis of studies on intercessory prayer (Jonas and Crawford 2003a) examined 13 randomized studies, of which 46% demonstrated beneficial health effects that were statistically significant compared to controls.

Intercessory prayer—meta-analysis

- **POSITIVE**
- In another review of 90 randomized controlled studies (Jonas and Crawford 2003b) positive outcomes were reported in 70% to 80% of clinical and laboratory studies.

Few DHI studies in psychiatry

- Intercessory prayer in depression—probable group suggestion effect
- Intercessory prayer in depression—prayer only and prayer+medication. No difference in outcome
- Reiki in depression. “real healer” vs sham healer controlled. Significant positive effect.
- Prayer in anxiety
- Prayer in alcohol abuse

Intercessory prayer in depression

- 12-week randomized controlled double-blind investigation of intercessory prayer on depression (O'Laoire 1997)
- all subjects knew that they were enrolled in the study, but none knew whether they had been assigned to the group receiving prayer
- Significant and equivalent improvements in mood were reported in individuals who were prayed for (N=496) and individuals who prayed (N=90).

Intercessory prayer in depression

- Positive outcomes were highly correlated with subjects' beliefs in the capacity of prayer to heal, and in subjects' beliefs that they were the recipients of prayer
- Comment: reliability of findings limited by the fact that standardized rating scales were not used.
- Outcomes are consistent with a strong placebo or positive expectation effect of prayer in depressed mood.

Intercessory prayer in depression

- Controlled double-blind study on distant healing in patients who met DSM-IV criteria for major depressive disorder compared intercessory prayer combined with antidepressants to conventional antidepressants alone (Greyson 1996).
- Outcomes using standardized mood rating scales did not show differential benefits of intercessory prayer over conventional medications alone

Reiki in depression

- Six-week double-blind sham-controlled trial on distant Reiki in depressed patients, some of whom met DSM-IV criteria for major depressive disorder (Shore 2004)
- significant beneficial effects of regular Reiki treatments using standardized mood rating scales
- Patients assigned to the sham Reiki treatment group did not improve

Prayer and anxiety

- Randomized double-blind study on patients with transient anxiety following pituitary surgery randomly assigned to a prayer group vs wait-list (Green 1993).
- Patients who were prayed for reported less post-operative anxiety in general, and requested fewer pain medications compared to patients in the wait-list group
- The researchers attributed beneficial effects to *suggestion and shared expectations (cannot rule out patients in both groups assuming being prayed for)*

Intercessory prayer and alcohol abuse

- 6-month double-blind controlled trial on alcoholics (N=40) (Walker 1997)
- Matched patients randomized to receive prayer vs wait list
- No differences in alcohol use patterns

fMRI studies

Visual evoked potentials under EMF shielding

- Standish, et al., (2003) found that checkerboard visual patterns observed by one member of a pair were related to activity in the visual association cortex of the “receiver” who was electromagnetically isolated in the MRI scanner.
- Wackermann (2003) case study using similar visual stimulus protocol and found significantly correlated EEG’s.

Above-chance brain “activation” in subjects paired with “healers”

- Achterberg (2005) Pilot study
- Twenty- two participants (11 pairs of healers and “recipients” of DHI)
- Healers randomly assigned “on” vs “off” intention state
- Nine of the eleven recipients showed brain activation during the “On” versus “Off” states

Healers and “patients”

- Correlations between general brain activation in scanned subjects and the intention “on” state in the healers were robust (p =.0001)
- *However*, brain areas in which activation was observed were *highly variable* across subjects and healing modalities (anterior cingulate cortex, frontal superior areas, and the precuneus)

fMRI study of paired healers and patients

- Findings may be consistent with *entanglement* at a macroscopic level
- Entanglement describes the a-causal relationships between two photons, characterized by different spins and originating from a common light source. The spins of entangled photons continue to interact in deterministic ways when physically separated from one another.

Healers and patients—implications of fMRI findings

- *Entanglement* has been confirmed to occur between photons at distances up to 10 miles
- Penrose, Mae-Wan Ho, and others have suggested that certain *highly coherent macroscopic systems*, including the brain, exhibit the property of entanglement with other complex systems including *other brains (empathy=entanglement?)*

Limitations of fMRI DHI study

- Not a study on “healing...” because did not examine possible DHI “healing” effects on specific target *symptom* or *disorder*
- Internal validity of findings is questionable:
  - Study design precludes establishing causal factors for *apparent* DHI effects.
  - Three people were in the control booth and aware of the timing of the send/no send conditions and may have *influenced* outcomes (sub-liminal? Psi? other?)

Limitations of fMRI DHI study

- Because the study design examined healers using disparate healing traditions it is *not possible* to know whether a particular DHI modality was associated with observed brain activation “effects” in matched patients or whether an unknown *idiosyncratic interaction* between members of the pair resulted in *apparent above-chance brain activation*.
- Independent *measures* of the healer’s “abilities” were not available and the “healing” ability of any given practitioner was unknown

Limitations of DHI studies to date

Limitations of DHI studies

- Jonas and Crawford (2006) noted major methodological problems of most DHI studies including:
  - adequacy of blinding
  - dropped data in laboratory studies
  - poor reliability of outcome measures
  - rare use of power estimations and confidence intervals
  - lack of independent replication

Dossey's critique of DHI research designs

- DHI research designs used to date might be ***expected to result in marginal or negative findings*** (Dossey 2006)
  - Where used traditionally for healing prayer is never carried out using randomized, double-blind controls
  - People generally pray for loved ones, whom they know and care for (not randomized target individuals, blood cells, brain tumors, immune factors, etc.)
  - Prayer is generally carried out in a well defined ritual context and with ceremony

…In other words…

- Positive findings of apparent correlations between healing intention and brain activity might be construed as *very significant* in light of *unnatural constraints on studies to date*

On-going and future DHI research

On-going fMRI DHI study

- On-going pilot study extends previous protocol by comparing pairs of empathically bonded healers and patients to pairs in which there is no empathic bond (Achterberg; in progress).
- **Question:** "Are there *significant* differences in correlated brain function (in fMRI) between empathically linked versus non-linked healers and patients?”

Proposed explanatory models of intention in “healing”

Explanatory models of intention in "healing"

- Serotonin hypothesis!
- Spiritual continuum model (D'Aquili and Newberg)
- Mind-body medicine
- Mentalism
- Quantum brain dynamics
- Subtle energies
- Psi models
- Morphic resonance

Serotonin hypothesis

- Studies on the neurophysiology of prayer comprise an important part of on-going research on the role of consciousness in health and illness. A serotonin hypothesis has been proposed to explain individual differences in the capacity to achieve transcendent spiritual experiences (Borg 2003).

Serotonin hypothesis

- Findings of a small functional brain imaging study using positron emission tomography (PET) suggest that high serotonin receptor binding correlates with a relatively greater capacity for experiences of “self-transcendence.”

Neurophysiological models

- D'Aquili and Newberg have proposed a spiritual continuum model in efforts to explain the range of reported mystical and religious experiences (D'Aquili 1993; 2000).
- Human capacity for spiritual experiences is embedded in complex neural connections between primitive brain areas (the limbic system) and association areas of neocortex that confer significant evolutionary advantages on humans.
- Individual or group prayer, meditation, and other forms of ritual contemplation are *unitive* experiences that share common experiential and neurophysiological features.

D'Aquili and Newberg

- The *kind* and *intensity* of a spiritual experience is determined by the particular brain regions involved and the degree of shared activity between them
- While this conventional model may explain *some* cases of "healing" where there is awareness of presence and intention of "healer" it *cannot* potentially explain DHI)

Mind-body medicine

- Intentionality affects brain activity including autonomic functioning which in turn influences immunological and neuroendocrinological status (Pert)
  - *May* explain some outcomes when patient is self-directing intention
  - *Cannot* explain outcomes when patient unaware, over distances or with shielding

Mentalism

- Mind exists independently outside of the material World and interacts with brain at a quantum level (Eccles' dualist-interactionism model)
  - Metaphysical position assuming non-material "mind"
  - Properties of "mind" cannot be falsified using available means

Quantum brain dynamics (QBD)

- Quantum field theory (QFT) can be invoked to explain an intrinsic “level” of quantum functioning associated with brain activity that permits superposition of possibilities and non-local control of states (Jibu and Yasue)
- Recent findings suggest possible QFT “effects” at neuronal level (Pizzi)

Emerging evidence for distance QF effects

- Cultures of cloned neuronal stem cells grown on circuit boards demonstrated a non-local phenomenon that cannot be explained by classical physics (Pizzi 2004)
- Stimulating of one culture with a low-power laser (630nm) resulted in maximal cross-correlation in single unit recordings of another culture shielded at several meters distance
- This “effect” was *only observed in neurons cloned from the same genetic line of cells*

Psi models

- Psychic phenomena “manifest” in conditions of non-local resonance between a brain and a quantum vacuum resulting in access to *holographic, non-local information* (Radin)
- “super-physical realms” postulated by *superstring theory* permit information flow and other “effects” at apparent *superluminal speeds* (Tiller)
  - Theory terms difficult to describe
  - Mechanism cannot be falsified using available means

“Subtle energies”

- “Dysregulation” caused by “subtle” *energy fields* interacting with mind-body induces changes in neurotransmitters or neural circuits manifesting as psychological symptoms (Furman and Gallo)
  - Meaning of “subtle” energy fields unclear
  - Mechanism cannot be falsified using available means

Placebo effect

- The placebo effect probably explains some cases of positive outcomes with healing intention.
- However, the placebo effect is clearly not an adequate explanation of all observations and research findings of this phenomenon.

Limitations of explanatory models

Conventional models

- Classically described phenomena including magnetic and electromagnetic fields *cannot fully* explain above-chance correlations between intention or “subtle” energies and beneficial outcomes.

Conventional models

- Reported effects of QiGong on peak alpha frequency or nonspecific neuroendocrinological markers may be associated with a relative increase in anomalous magnetic field strength measured at the healer's hands.
- However, this effect appears to operate locally only, is reportedly diminished or eliminated with EMF shielding (Faraday cage), and therefore cannot *potentially* explain non-local or superluminal effects that have been observed with DHI research when shielding is used.

Unanswered questions

Unanswered questions

- Is the mechanism of healing intention with touch and shared empathy fundamentally different from distant healing intention in absence of touch and empathy (characteristics and limits of human “energy field”)?
- Is healing intention a *special case of psychokinesis*. PEAR REG data suggest no decrement in “effect” over distance (need for human intention vs machine “intention”)?

More questions

- Does “miraculous healing” in which serious illnesses are spontaneously “cured” involve same or different properties of consciousness that operate in healing intention (including DHI)?
- Does prayer *for oneself* or *between two empathically linked individuals* in which the prayer believes he/she is doing the healing work in a different way than intercessory prayer (in which a divine presence is invoked as the healing agent?)

...even more questions

- Are certain *forms* of prayer or other kinds of distant healing intention more *effective* than others?
- How important is empathy in healing?
- What influence (if any) do distance, duration, frequency or *quality* of intention have on outcomes?
- What is the meaning of highly inconsistent outcomes associated with disparate research methodologies and statistical methods?
- How can we better measure possible influences of researchers' and patients' attitudes or beliefs on outcomes?

…and more questions

- Can the methodology and techniques of contemporary Western science potentially elucidate human consciousness including the special cases (eg, DHI healing, other psi phenomena)?
- Are proposed QM/QFT models of DHI in healing *testable*?…If not they may be merely *metaphysical assertions* and popular *metaphors*

…and the “big” question

- If optimum conditions for intention and prayer and healing are identified will it become possible to “train” humans as intentional healers?
- Assumes neuroplasticity, capacity for “entrainment” of neurophysiological or energetic correlates of intention

- ....So...what is “healing” and how can one learn to be a “better” healer?...

Towards a best-fit model of consciousness in intentional healing

Core assumptions of *best-fit* model of consciousness in healing

- Beneficial "effects" of intention occur in gross (Classical) *and* microscopic (Quantum) space-time-energy domains manifesting as *gross* or *subtle* changes in dynamic brain states
- Certain induced "effects" are *stable*; others are unstable or "*metastable*" and deteriorate *before* they are detectable using conventional functional brain imaging

Core assumptions of *best-fit* model of consciousness in healing

- Certain stable patterns of induced brain activity at classical or quantum domains exhibit “coherence” or *other highly ordered states* (QBD) that correspond to beneficial changes in target symptoms including cognition, mood or behavior

Alternative models that may more adequately explain intention in healing

- Stimulated biophoton emission
- Supraluminal information transfer
- Energy psychology

- Are the above *different metaphors* for the same “phenomenon” (Blind man and elephant)?

Toward a synthetic model of consciousness in healing

A synthetic model of consciousness in healing

- Based on analysis of findings to date, requirements of a *synthetic* model of consciousness in healing that contains elements of disparate models can be adduced that may more adequately explain beneficial outcomes of directed intention in both “gross” and “subtle” domains

Toward a synthetic model

- Some beneficial outcomes in physical symptoms associated with intention or “subtle” energies result from classically described forms of energy or information including magnetic fields or electromagnetic fields.

Toward a synthetic model

- Some beneficial outcomes may result from changes at the level of theorized non-classical energy or information fields associated with the body-brain including large scale coherent quantum fields, and possibly “super-physical realms” that “enfold” the human body and consciousness at multiple dimensional levels.

Toward a synthetic model—encompassing mental illness

- Following above logic it is reasonable to assume that:
  - Correlates of beneficial outcomes in mood, cognitive functioning or behavior (eg: EEG changes, neuroendocrinological changes, and changes in mood, cognition or behavior using standardized symptom-rating scales) are *linked* to postulated non-classical kinds of energy or information associated with shared empathy, directed intention or “subtle” energies.

Toward a synthetic model of consciousness in *healing—bottom line*

- *Parsimony suggests that beneficial outcomes associated with disparate treatment approaches that use directed intention or "subtle" energy therapies are probably mediated by overlapping classical and non-classical types of energy and information and take place in both classical and non-classical space-time.*

Defining goals of a research program on distant healing intention

- Three phases
  - I. Replication studies and naturalistic observations
  - II. Identify and refine “optimum” strategies for DHI by major symptom or disorder
  - III. Develop and refine training protocols targeting specific symptoms/disorders

Phase I

- Characterize above-chance correlations between DHI and beneficial outcomes in discrete target symptoms for many forms of DHI
- Compare laboratory studies with outcomes in "naturalistic" settings simulating ritual context of prayer or "healing intention" (per Dossey)
- Fx brain imaging (**healers and patients**)—fMRI, EEG (LORETA), HRVSQUID; Biophoton detectors
- Serology: immune, endocrine fx
- Standardized Sx rating scales

Phase II: Defining “optimum” DHI strategies

- Identify “optimum” DHI strategies associated with beneficial outcomes viz:
  - Healer-patient empathy (measures?)
  - DHI modality by specific Sx or disorder
  - Shielding vs. non-shielding
  - Distance effect (decrements over distance)
  - Time effect (when to “look for” effects)
  - Group effect (one vs. several “healers”)

Phase III: Developing protocols for "training" intentional healing

- Methods for "optimum" healer-patient empathy
- Methods for "optimum" meditation, energetic or mind-body approaches (qigong, Reiki, TM vs Vipassana,etc)
- Protocols for EEG biofeedback training to achieve functional brain states (both healer and patient) associated with "optimum" healing
- Stimulation techniques for "optimum" brain activation (eg VR exposure; Ayahuasca (others); rTMS; photonic driving; sound)

Predictions—future research findings of DHI

- When treatments using intention are efficacious, *changes* in brain function will be demonstrated to take place at both gross and quantum levels
- These changes will prove to be macroscopic *coherent* brain states or complex oscillatory relationships between brain and body measurable by EEG, SQUID (MEEG), and biophoton detectors

A prediction

- Future advances in DHI research will clarify optimum “conditions” of intention in healing permitting development of effective protocols for “training” future healers in the use of intention in the treatment of medical and psychiatric symptoms.

A final thought...

- This future *knowledge of healing* will lead to fundamental evolution in both the *meaning* of treatment and the capacity of Western medicine to relieve human suffering
- This *future knowledge* will open the way to integration between disparate systems of medicine at conceptual and practical levels