

**The Effects of Intentional Thought in Close Proximity or at a
Distance: Demonstrating the Relation between Mind and
Matter on Seed Germination**

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The work reported in this thesis is original and carried out by me solely, except for the acknowledged direction and assistance gratefully received from colleagues and mentors.

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ABSTRACT

The Effects of Intentional Thought in Close Proximity or at a Distance: Demonstrating the Relation between Mind and Matter on Seed Germination

If you have built castles in the air, your work need not be lost; that is where they should be. Now put the foundation under them. – Henry David Thoreau

The purpose of this research was to measure biologic effects of positive and negative intent as a bridge between mind and matter with proximity as a factor, using seed germination as an objective biomarker. Two experiments were performed, one experiment in close proximity, 10 inches from target and repeated at a distance of 5 miles, utilizing zucchini seeds. Conditions compared were untreated control, positive intent, and negative intent. Intent was administered for 20 minutes, every 12 hours. The objective marker was pre-post weight of the seeds, and post length of seed sprouts over a 96 hour growing period. A total of 150 seeds were tested: 3 groups of 25 seeds for the near experiment (25 control, 25 positive intent, and 25 negative intent), and three groups of 25 seeds for the far experiment.

The experiment yielded mixed results. The weight increase of seeds receiving positive intent was significantly greater than the weight increase of seeds receiving negative intent ($p < .001$). However, there was no significant difference in seed stem length between the positive and negative groups. Stem length increase was unexpectedly greater in the groups of seeds that received intention from a distance when compared groups of seeds that received intention at close proximity ($p < .001$). Intentions both positive and negative together had a statistically significant effect on weight, when compared to control ($p < .001$). This study suggests that intention can directly affect living biological systems, and that a seed germination bioassay has the sensitivity to enable detection of effects caused by various applied energetic conditions.

TABLE OF CONTENTS

Section	Page Number
ACKNOWLEDGEMENTS.....	iv
ABSTRACT.....	vi
TABLE OF CONTENTS.....	vii
LIST OF FIGURES	viii
LIST OF TABLES.....	ix
CHAPTER 1: Introduction	1
Statement of the Problem.....	2
Purpose of the Study.....	3
CHAPTER 2: Review of Literature.....	5
Energy.....	5
Subtle Energies	7
Intentionality.....	Error! Bookmark not defined.
Distant Healing	13
Healing on Seeds.....	16
Distant Healing on Plants.....	17
Distant healing effects on bacteria and yeasts	18
Distant healing effects on DNA	19
Summary.....	20
CHAPTER 3: Research Methods.....	29
Overview.....	29
Procedure	32
Monitoring	34
Materials	36
Methods of Data Collection and Analysis	37
CHAPTER 4: Results	39
Independent Variable.....	39
CHAPTER 5: DISSUSION	50
Did intention have an effect on matter?.....	51
Pilot Study.....	52
Experiment Study: Strengths	53
Suggestions for Improvements	54
Sample size of seeds	56
Environment.....	57
Separation	57
Suggestions for Further Research.....	58
Energy Medicine, Spiritual Healing and Intention	59
REFERENCES and BIBLIOGRAPHY	63

LIST OF FIGURES

Figure	Page Number
Figure 1. Photograph of Black Zucchini Seed Showing where they sprout.....	33
Figure 2. Greenhouse used to house zucchini seeds.	36
Figure 3. Placement of the seeds on shelf.	36
Figure 6. Seed Weight as a Function of Time and Intention (Control vs. Intention)...	46
Figure 7. Seed Weight as a Function of Time and Intention (Negative vs. Positive) ..	46
Figure 8. Experiment A (close proximity with positive, negative and control intention) at zero hours.....	47
Figure 9. Experiment A (close proximity with positive, negative and control intention) at 48 hours.....	47
Figure 10. Experiment A (close proximity with positive, negative and control intention at 96 hours.....	48
Figure 11. Experiment B (distant proximity with positive, negative and control intention) taken at zero hours.....	48
Figure 12. Experiment B (distant proximity with positive, negative and control intention) taken at 48 hours.....	49
Figure 13. Experiment B (distant proximity with positive, negative and control intention) taken at 96 hours.....	49

LIST OF TABLES

Table	Page Number
Table 1. Means and Standard Deviation for Sprout Length as a Function of Intention and Proximity.....	40
Table 2. Overall ANOVA Results for Sprout Length as a Function of Intention and Proximity.....	41
Table 3. ANOVA Contrasting Results for Sprout Length as a Function of Intention and Proximity.....	41
Table 4. Pre-test Means and Standard Deviations for Seed Weight as a Function of Intention and Proximity	43
Table 5. Test Means and Standard Deviations for Seed Weight as a Function of Intention and Proximity.	44
Table 6. ANOVA Results for Seed Weight as a function of Intentiona and Proximi	45

CHAPTER 1: INTRODUCTION

Our life is shaped by our mind; we become what we think. Joy follows a pure thought like a shadow that never leaves.--Buddha

Energy medicine has made great strides in developing unifying concepts for mapping the integration of the body/mind/spirit connection in the healing process, with studies and interventions such as psychoneuroimmunology, biofeedback, prayer, imagery, and energy-based healing. One such unifying concept in research is intentionality. Intentionality for the purposes of this study is defined as “the intentional influence of one or more persons upon another living system without utilizing known physical means of intervention.”¹ Intentionality represents an important issue within the energy medicine field and its importance has been demonstrated in several studies. For example, intentional healing interventions have been associated with positive effects on sick organisms and have been documented in more than 155 controlled laboratories and clinical studies.² It has been demonstrated that many of these therapeutic effects occur without physical touch, indicating that energy of some kind is radiated or broadcast, or in some way forms a connection between practitioner and patient.³ Numerous double-blind studies have shown that healers can accelerate wound healing in mice and humans, retard the growth of cancer cells, affect enzymes, seedlings, grass and water, increase hemoglobin, and reduce pain in humans.⁴

The study of intention is an opportunity to increase the scientific understanding of health and healing. Using the mind to heal the body was once a radical idea. How could something as ephemeral as a thought help you heal? Research is moving energy healing

and body/mind connection medicine into the main stream, changing peoples' lives and altering healthcare as we know it, and rightfully so. The healthcare industry is demanding proof that treatment is effective. Until recently it has been difficult to measure the effects of emotions like love, hope or anger on the body. Now, however, there are physicists, scientists and researchers that have completed groundbreaking studies in energy and mind/body connection medicine. This study aims to contribute to a scientific understanding of the relationship existing between mind and matter and their relation to health and wellness.

Statement of the Problem

The *International Society for the Study of Subtle Energies and Energy Medicine* defines energy medicine as including “all energetic and informational interactions resulting from self-regulation or brought about through other energy linkages to mind and body.”⁵ Although clinical and fundamental research on these modalities exists, they remain outside the mainstream because they challenge the dominant biomedical paradigm. The lack of acceptance is not surprising; the history of science and medicine demonstrates that if a concept or idea lies outside the known paradigm, significant research is required in order to shift from the known paradigm to the new one. An area of research in the field of energy medicine includes ways in which intentions interact with our own bodies, such as self-healing, and how our intentions might influence others through non-local means such as in distant healing. Continued research in the area of energy and mind/body medicine is required to move the biomedical community toward accepting the notion of the mind being a major influence in terms of physical healing.

Purpose of the Study

Research in the area of intentionality presents an opportunity to deepen our understanding of health and healing by asking perplexing questions regarding the level of influence our mind has on matter. This has lead scientists to explore the influence of intention both directly and indirectly on living systems. Are there specific types of intent that may be contributing to the promotion or exacerbation of disease? This study examines the effects of positive and negative intent on the germination of seeds.

Chapter 1 Endnotes:

¹ Jonas Wayne, M.D., and Cindy Crawford, "Science and Spiritual Healing: A Critical Review of Spiritual Healing, Energy Medicine and Intentionality," *Alternative Therapies in Health and Medicine* 9, No. 2 (March 2003): 56-61.

² Daniel J. Benor, M.D., *Healing Research: Holistic Energy Medicine and Spiritual Healing* (Munich, Germany: Helix Verlag, 1993), 75.

³ J. Quinn, "Therapeutic Touch as an Energy Exchange: Testing the Theory," *Journal of Advanced Nursing*, 11 (January 1984): 42-49.

⁴ Daniel J. Benor, M.D. *Spiritual Healing: Scientific Validation of a Healing Revolution*. (Southfield: Vision Publications, 2001), 507.

⁵ International Society for the Study of Subtle Energy and Energy Medicine (ISSSEEM). "Definitions"; available from home page [<http://www.ISSSEM.org>]; Internet; accessed 8 May 2007.

CHAPTER 2: Review of Literature

Impulse of energy and information that we experience as thoughts...are the raw material of the universe.--Deepak Chopra, M.D.

Energy

There was much debate in the middle of the nineteenth century about the origin of diseases.¹ The ancient historical view was that disease was spontaneously generated instead of being created by microorganisms which grow by reproduction. The germ theory of disease, also called the pathogenic theory of medicine, is a theory that proposes that microorganisms are the cause of many diseases.² Although highly controversial when first proposed, the germ theory of disease is considered the single most important contribution by the science of microbiology to the general welfare of the world's people.³ It is now a cornerstone of modern medicine and clinical microbiology, leading to such important innovations as antibiotics and hygienic practices. Just as it once was a daunting challenge to develop a solid theoretical framework for understanding the “germ theory” it is equally daunting for modern medicine to explain the energy system and how it works.

The idea that an energy exchange of some type occurs between individuals is a central theme in many healing techniques. One of the main blocks to the acceptance of energy by western science has been the lack of a plausible mechanism that could explain the nature of this energy or how it is exchanged.⁴ Energy is one of the most mundane yet mysterious concepts in modern physics.⁵ The concept of energy addresses the fundamental question of how things move in space.

Author and physicist Wolf (2007) states, “Energy cannot be defined as anything else more basic. It is a measure of the ability to do work. Hence we imagine things to have energy depending on how much work they are able to do. In science you will often find that many things cannot be defined more basically without going in circles. We cannot define space, time, energy, mass, or force. But we do know how to use these concepts to measure human experiences on a numerical scale. Mass measures inertia to forces. Force measures the ability to change the movement of a mass. Time measures how things move, and space measures where things are, and so on.”⁶

Researcher and author Benor (2007) explains, “Energy is a term used in conventional science to indicate the force needed to move an object or current when it is electromagnetic energy. Biological energy is a term used in complementary alternative medicine (CAM) and especially in spiritual healing - because if you hold your hands opposite each other and move them together and apart (or a healer holds a hand near the body) there are often sensations of energies perceived by the hands and body. So far, no clear methods have been developed to measure bioenergies objectively.”⁷

Fortunately, energy-based technologies and therapies are making steady, slow inroads into mainstream western medicine. For example, acupuncture, healing with hands and meditation have been included in therapies in some hospitals in the USA.⁸ In recognition of the need to amend allopathic medicine, Congress formally established the Office of Alternative Medicine (OAM) at the National Institutes of Health (NIH) in 1993.⁹ In 1998 Congress expanded the mandate and responsibility of the Office by creating the National Center for Complementary and Alternative Medicine (NCCAM). The importance of CAM is evidenced by the investment of over \$161 million in NCCAM

and other CAM research at NIH.¹⁰ The NCCAM budget has increased yearly from the initial outlay of two million in 1992. The estimated 2005 budget is a 50% increase over what the budget was in 2001.¹¹

Energy medicine is gaining acceptance for intervention. Use of at least one of 16 alternative therapies increased from 33.8% in 1990 to 42.1% in 1997. Alternative therapies increasing in use the most included herbal medicine, massage, megavitamins, self-help groups, folk remedies, energy healing, and homeopathy.¹² The probability of users visiting an alternative medicine practitioner increased from 36.3% in 1990 to 46.3% in 1997.¹³ In a research study conducted by Eisenberg at the Harvard Medical School, alternative therapies were most frequently sought after for chronic conditions, including back problems, anxiety, depression, and headaches.¹⁴ Healthcare is changing and science is discovering that health is more than just the absence of illness. The human body comes with its own standard equipment for self-healing. Energy therapies place an emphasis on the body/mind/spirit and how to direct energy within the body to activate self-healing, and create homeostasis. One day in the near future, the highly controversial theories of energy medicine will be the cornerstone of this millennium's new medicine.

Subtle Energies

According to The International Society for the Study of Subtle Energies and Energy Medicine (ISSEEM), subtle energies are a concept more difficult to define within the current scientific paradigm. Ancient and modern wisdom traditions describe human bioenergies referred to by many names (e.g., chi, ki, prana, etheric energy, fohat, orgone, odic force, mana, and homeopathic resonance) and are believed to move throughout the so-called "etheric," or subtle energy body. Thus they cannot be measured using

conventional instrumentation. In addition, many of the complementary and alternative therapies that are becoming increasingly popular appear to involve the flow of these subtle energies through the dense physical body. It is traditionally accepted that expansions of consciousness often are related to changes in subtle energies that cannot be quantified. These latter "energies," which are said to be associated with interactions and with transcendence, may not, in fact, actually be involved with known physical fields.¹⁵ Subtle energies are the biological energy fields where the work of healers is done.¹⁶

Rubik (1995) writes, "Subtle energies may be exchanged or otherwise involved as a condition of physical resonance between the energy fields and patient, which may mediate the beneficial effects."¹⁷ The central nervous system emits electromagnetic signals up to 30Hz as measured by electroencephalogram (EEG), although these are of extremely low intensity.

Shealy & Church (2006) in their book *Soul Medicine: Awakening the Inner Blueprint of Abundant Health and Energy*, state that there are "three pillars of being" that unify our body/mind/soul connection.

The authors define the first pillar by explaining, "Energy systems are matrices of connection; a change in any part changes the whole, and a change in the whole rearranges the parts. A change in the energy field works itself outward into the physical change, and can clear a symptom."¹⁸

The second pillar is described as, "a change in consciousness which automatically changes the energy system. Consciousness connects to the quantum field."¹⁹

The third pillar is intention. “Intention provides the power, the motive force; to set in motion the complex chain of events that result in healing...A healer’s intention provides the organizing principle around which the healing event takes place. Intention conditions the field of consciousness, reorganizing energy into the configuration required for healing.”²⁰

Intentionality

What is intentionality? The term intentionality has caused confusion and controversy ever since philosopher Franz Brentano (1838-1907) coined it in the late 19th century. Brentano believed intentionality was mental; an act of the mind rather than the content of the mind.²¹ Scholars have argued over its definition and its relationship to consciousness, to purposeful mental activity and to healing.²² Some have extended their views of intentionality beyond human characteristics to a basic force or phenomenon in the universe that characterizes all non-living and living things.²³ According to the *American Heritage Dictionary*, intentionality is defined as, “the state of having or being formed by intention.”²⁴ In philosophy, intentionality refers to a state of mind and the ability of consciousness to: 1) create mental objects that may not exist in reality; 2) apply that content to a perception of reality; 3) direct activity toward an end, and 4) have a concept of something unlike itself.²⁵ Contemporary researcher Marilyn Schlitz (1995) broadly defined intentionality as involving, “the projection of awareness, with the purpose and efficacy, toward some object or outcome.”²⁶ The emerging field of energy medicine has made great strides over the past few decades in unifying the concept of intentionality and its effects on health.²⁷

The work of Davidson and Ekman (1999), researchers with the Mind and Life Institute, may go a long way to illustrate the role of intention alone on the brain and body. These scientists, along with the University of California at San Francisco Medical School and University of Wisconsin, continue observing the electrical mechanisms in the brains of highly trained Buddhist lamas during various states of focused intention. Using functional, high-resolution EEG and state-of-the-art reflex monitoring, their early results illustrate that electrical activity and blood flow in the brain can be directed by conscious intention. Through systematic and repeated practice of intention, well-practiced lamas have succeeded in training the brain to direct electrical activity away from areas associated with the biochemistry of stress, tension and disturbing emotional or physical states (i.e., the amygdala and right prefrontal cortex) and increase activity in the area associated with the biochemistry of healthful emotional and physical states (i.e., the left prefrontal cortex).²⁸ Moreover, they have observed that the state of conscious intention on compassion engages a state of relaxation and well-being which surpasses even that achieved during a state of rest. The early results of this research suggest that parts of the brain thought previously to be fixed in function, such as the stress reflexes of the reptilian brain, may in fact be pliable and able to be changed, shaped and developed through ongoing practice of conscious intention.

Rubik (1995) writes, "Consciousness is causal; i.e., the healer's intent to heal may interact with the physical realm. More specifically, the conscious intention of the healer through prayer or other means may physically improve the health and well-being of the patient."²⁹

Candace Pert, author of *Molecules of Emotion* (1997), verified that the subconscious mind is not just in our brain, but that it is in all the cells of the body. This explains why our mental/emotional state so strongly affects our health.³⁰

Pert (1997) and Treishman (2001) believe that every cell in our body has a characteristic vibration. They went on to explain that when these cells vibrate at a certain rate and in a certain pattern, the body functions well and the person feels good. However, when they vibrate at a different rate and pattern, the body functions less well and the person feels poorly. These authors assert that every thought is a pattern of energy characterized by a certain vibratory rate and pattern and that the vibratory pattern of the thought and its consequent emotion are experienced throughout the entire body, by each individual cell, and that this vibratory influence triggers the release of certain kinds of neuropeptides which flood through the body. Thus, thoughts are patterns of energy which influence the functions of the whole body.³¹

William Tiller demonstrates in his book, *Adventures with Real Magic* (2005), the way some mind-body-matter interactions, also known as “psychoenergetics,” work. There is evidence to suggest that mind and matter interact on one another. Tiller presents a theoretical explanation for his experiments involving interactions between intention and inanimate/animate systems. Tiller uses a "bodysuit metaphor" to explain that we are all spirits having a physical experience as we go down the river of life, and we are intended to become co-creators with our spiritual creators.³² He explains that we can think of ourselves as having many layers from the electric monopole layer of physical reality to the magnetic monopole of the emotional and mental domains. The spirit inside of us drives us, and living is a process of building an infrastructure which allows more spirit to

enter dense matter.

Grad (McGill University) and Smith (Rosary Hill College) were early researchers in energy-based healing. In 1963 both studied the healing effects of Oskar Estebany who for more than 25 years practiced the technique of laying-on-of-hands to demonstrate increased plant growth, healing wounds in mice, and increased enzyme action. These early studies demonstrated that a healer had significant effects on growth and cellular repair.³³ Creating coherent research studies is the key to producing qualitative and quantitative deductions that contribute to the integration and understanding of intentionality and the affect of mind on matter.

Benor (2001) points out that, “the effects of healing upon the growth of plants may be somewhat similar to the effects of healing upon humans.”³⁴ It might be valuable to perform even more studies on animals, plants, or bacteria in extremely controlled environments in order to establish the efficacy of energy healing.³⁵ It is the aim of this study to show quantifying evidence that focused intention affects matter that lies outside the physical body, namely the germination of seeds.

Zahourek (2004) theorized that intentionality forms the matrix of healing.³⁶ Intentionality, used synonymously with intention, and defined as a “purposeful mental influence,” has been an independent variable in studies evaluating the effects of distant healing including³⁷ altering immune responses,³⁸ changing the chemical and energetic properties of water,³⁹ affecting disease process and recovery rates associated with responses to intercessory prayer,⁴⁰ promoting pain relief and reduction of anxiety with Therapeutic Touch,^{41 42 43} and increasing quality of life for chronically ill patients through prayer.⁴⁴ In the healing literature, various authors contend that intentionality is

not the same as mind consciousness. The theory of intentionality has grown; it is no longer the sole domain of philosophers and poets. Science has entered the playing field with new technology, and a new attitude. It is expanding the conceptual framework of intentionality with the purpose of examining the possibilities that it may have effects on living systems, and connections to health and wellbeing.

Distant Healing

Distant healing has been defined as, “a conscious, dedicated act of meditation attempting to benefit another person’s physical and emotional well being at a distance.”⁴⁵

Targ (1997) in her review of distant healing traditions reveals that one type or another of distant healing has been practiced in nearly every country and culture since the dawn of civilization. Current research has divided distant healing into those examining isolated preparations of cells or enzymes, those focusing on nonhuman biological organisms, and clinical studies on humans. Well controlled laboratory experiments involving distance healing of nonhuman systems have found replicable effects of direct mental influence on fungi, yeast, bacteria, and cancer cells under blinded conditions.⁴⁶

Laskow (1998), in a series of studies, examined the specific intention of unconditional love and possible assumed aspects of healing.⁴⁷ The first set of experiments assessed the effects of Laskow’s mental intentions on tumor cells. The intentional focus of sending unconditional love to cells that had no natural order or harmony, yet this focus inhibited cell growth by 41%.

In a second series of experiments, water samples were used to measure the effects of conscious intentions of the healer. After Laskow focused his intention on a sample of

water, it was used to treat tumor cells. Water affected by the intention of unconditional love demonstrated a 21% inhibition of cell growth. The largest effect, 28% inhibition of cell growth, resulted from water “receiving” the intention that the cells return to natural order and harmony.

Elmer Green, a pioneer in the field of biofeedback training, is involved in a project at the Menninger Institute he calls "The Copper Wall," which explores possible electromagnetic correlates of the human energy field. It has been demonstrated that sitting in front of a copper wall can induce deeper meditative states. “When people are meditating in a really potent way, they are generating electrical voltages in their body. For example, healer voltages, when accompanied by an intention, are not the normal body voltages. They are at least 1,000 times bigger.⁴⁸ In an experiment of six meditations sessions, one of the healers produced only one pulse of voltage. But in the first of the healing sessions, there were 15 to 20 pulses generated. Green speculates that they were connected with the intention to heal. “I have accepted that healing at a distance is a fact; these anecdotal types of accounts do not constitute scientific evidence. But I think that there has been enough research now regarding the effects of prayer at a distance to indicate that it really is happening.”⁴⁹

Intention and Intentionality

It is useful to consider the semantics of these words for the purpose of clarification regarding their use in this paper. Intention is defined as a mental state directed towards achieving a goal. Distinctions can be drawn between two related mental

states directed at goals – desire and intention. These two states differ in three separate respects.⁵⁰

- Intention is directed at the intender’s action, whereas desire can be directed at anything (e.g., “I want O” where O can be any object or state of affairs, including another person’s actions or experience). Thus, we can desire what we consider to be impossible, but cannot intend that which we consider to be impossible.
- Intentions are based on a certain amount of reasoning whereas desires are typically the input to such reasoning (“I intend to A because I desire O”). A desire can be triggered simply by the presence of an attractive object; an intention often involves some deliberation and decision making.
- Intentions often come with a commitment to perform the intended action, whereas desires often do not carry such commitments.

Intentionality is not the same as mind because intentionality is a property of objective actions, whereas mind is essentially the “apparatus” that harbors and produces subjective mental states. Intentionality is also not the same as consciousness, which may be defined as the capacity to be conscious, or the state of conscious awareness. Intention is also distinct from attention. Intentions are mental states representing future actions; whereas attention is a mode of focusing or selecting objects of perceptions, thinking and awareness.⁵¹

One may also distinguish intention from related psychological concepts like expectations, schemas, scripts, and so on. For example, a patient entering an oncologist’s office automatically brings a set of expectations. A very different set of expectations would be brought to a traditional Chinese medicine healer’s office. These expectations may include rhetoric, power relations, behavioral repertoires, etc. Such variables can influence a healing attempt, but they are distinct from the concepts of intention and intentionality.⁵²

Healing on Seeds

A classic healing experiment with a very simple design was made famous by Grad (1963, 1964).⁵³ In these experiments, two trays of seeds were prepared after they had been stressed in some way. One of the trays was watered with water that had been held by the healer, and the other with ordinary water. Several of these studies have found that there was greater germination rate and growth in the groups that were watered with water that had been held by the healer.⁵⁴

Yiji (1991) studied the effects of qi on the germination rate of rice seeds. Two qigong masters separately emitted qi from their Laogong point (a point on the palm of the hand) for 30 minutes to different batches of dry rice seeds held in the palm of their hands. “Each procedure was repeated for three different batches of seeds over five periods during the day. The treated seeds were germinated on a wet paper surface in the dark. After 36, 40, and 44 hours, germination rates were determined by counting the number of sprouts. Controls included one batch of seeds that was treated with a mimic qigong administered by individuals without qigong training or experience, and two seed batches that did not receive qi. The germination rates for three batches of seeds treated by a qigong master in a given 30 minute period of time were averaged. For one qigong master, the percentages of seeds that germinated after 40 were 56, 43, 43, 41, and 52 compared with the control values of 30. The other qigong master obtained similar results. The percentage of seeds that germinated was generally greater for the qi-treated seeds than that of the controls.⁵⁵

Distant Healing on Plants

Plants make good experimental subjects. They are inexpensive, low maintenance, and require no elaborate permission forms.⁵⁶ Many excellent studies have been published that looked at the healing of plants using positive intention.

By filling three pots of the same size, filled with soil from the same source and using three batches of seeds from the same packet, one can test one's ability to heal. Large seeds, such as corn seeds, are handy as they can be planted with their pointy ends down, each to the same, measured depth. Place the pots where they will each get the same intensity and duration of light, and water them with measured, equal amounts of water. Send positive thoughts or prayers to the first, leave the middle one alone, and send negative thoughts to the third. After two weeks you may easily see visible differences in the growth rates in each pot. Formal studies have shown significant effects of distant healing with plants.^{57 58 59 60 61 62}

Roney-Dougal and Solfvin (2003) conducted a field trial with lettuce plants on a commercial organic farm. This was a replication of a previous study conducted in 2001. In both experiments, a healer was asked to enhance a group of healthy organic lettuce seeds for greater germination, growth, and better health. Significant results were found in the health, but not the germination or growth of the treated lettuce seeds. The treated lettuce grown from the treated seeds had less fungal disease than those from seeds that were untreated. The 2001 original study used a randomized double-blind design with four treatment conditions: one jar of seeds (HX) was enhanced by the healer while a control person mimicked his actions with a second jar (NH) and two jars (C1, C2) remained untreated on the table. The seeds were germinated, planted out, and harvested by the farmers. Each lettuce was weighed upon harvesting and after trimming, were rated

for slug and fungal damage, and sent off to market. The growth hypothesis was confirmed by significant enhancement in gross weight and net weight for treated seeds, and the health hypothesis was confirmed by the significant reductions in slug and fungal damage in the lettuce that was enhanced by the healer. Overall, the enhanced seeds yielded about a 10% larger total crop during the season than any of the other three groups, suggesting a practical value for the commercial farmer.⁶³

Distant healing effects on bacteria and yeasts

Distant healing produced significant effects on enhancing and retarding growth of bacteria^{64 65 66} and yeasts.^{67 68} These studies suggest that healers may be able to slow or halt the progress of an infection by retarding the growth of infecting organisms.

Nash⁶⁹ (1984) explored effects of distant healing on bacteria that mutate between two forms, "lac negative" and "lac positive," showing that healing could selectively increase either form. If this is an effect on mutation, it provides encouragement to believe that healing might influence mutating cells such as cancers in the body. However, as Nash notes, an alternative hypothesis is that the distant healing selectively influenced the growth of one or the other form rather than influencing mutation rates.

Pleass and Dey (1990) explored the effects of mental intent on the motility of algae. In their first experiment they found highly significant effects.⁷⁰

Braud and colleagues (1979, 1990) showed that healers could slow the rate of hemolysis (the bursting of red blood cells) when cells were placed in diluted saline.^{71 72} The most likely mechanism for this effect is a strengthening of the cell wall of the red blood cells. If this is the case, it might explain some of the mechanisms for many healing effects. The cell wall is a very active transport system for moving fluid, chemicals, and

molecules in and out of the cell. If healing can alter these gateways, it may enhance cellular functions and increase protection of the cell from negative influences. Another possibility is that the cell wall may act as an antenna for receiving healing "messages." Snel (1990) also showed that distant healing could slow the growth rate of cancer cells cultured in the laboratory.⁷³

Distant healing effects on DNA

Rein and McCraty (1994, 1995) at the HeartMath Institute showed that distant healing could alter the rate of winding and unwinding of strands of DNA.^{74 75}

The implications of these studies are far-reaching, indeed. First, this could be a mechanism for the action of healing within the body since DNA controls many of the functions of cells in the body. Second, if healing intent can influence these complex molecules that control genetics, it is possible that intent could influence heredity and evolution.⁷⁶

In trials at HeartMath (2003) in which individuals were instructed in and practiced techniques that were designed to generate feelings of love and appreciation while holding the specific intention of causing a change in the DNA (either wind or unwind), an increase in heart coherence was found with the specific types of coherence varying among different participants. There was also a significant change in the configuration of the DNA. In some cases, changes in DNA configuration of up to 25% were observed, indicating a very robust effect.

In contrast, the control group showed no significant increase in heart coherence and produced no significant change in the DNA. In general, the individuals who

generated the highest heart coherence ratios produced the most marked effects on the configurational changes of the DNA.

When HeartMath-trained participants maintained a heart coherent state but did not hold an intention to cause a change in the DNA, the results were similar to those of the control group, even though the control group held the intention to cause a change in the DNA. Similarly, when the HeartMath-trained participants held the intention to change the DNA but maintained a normal psychophysiological state (without heart focus), they did not exhibit increased coherence and did not produce a significant change in the DNA. However, there was a directional trend in the DNA data for this condition that was not observed when participants did not have the intention to cause a change.⁷⁷

Summary

While distant healing appears to contradict our ordinary sense of reality and the laws defined by conventional science, there are theoretical paradigms that appear to offer explanations for healing. These studies of “absent” healing introduce Newtonian medicine to the action of the mind from a distance; “non-local consciousness” as Dossey terms it.⁷⁸ This is consistent with the theories of modern physics that postulate interactions between certain particles occur from any distance. These theories have been supported by research.^{79 80 81 82} This is also supported by a wealth of research in parapsychology, that has demonstrated that minds can interact through telepathy; that a person can obtain information about physical objects from a distance through clairsentient perception,⁸³ and that direct mental influence over physical objects is possible.^{84 85}

Distant healing and other non-local effects of energy medicine are acknowledged by several of the complementary therapies.⁸⁶ One would hope that the benefits of such an inexpensive intervention would appeal to those who are concerned over the high costs of medical care. Distant healing research confirms the effects of prayer on health. This does not prove, however, that prayers within any particular religious framework are more effective than any other, or than secular distant healing. Subjective experiences of healers and those healers involved in distant healing further support reports of experiences with prayer in religious settings. Those involved with healing may have a personal sense of heightened spiritual awareness.⁸⁷ The issues raised by distant healing research are extremely complex. The International Society for the Study of Subtle Energy and Energy Medicine (ISSSEEM) is truly at the frontier of science in exploring these borderlands between Newtonian and quantum worlds, between the realms of matter and of spirit, through the study of subtle energies and energy medicine.^{88 89}

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CHAPTER 3: Research Methods

We do not understand much of anything from...the “big bang,” all the way down to the particles in the atoms of a bacterial cell. We have a wilderness of mystery to make our way through in the centuries ahead. – Lewis Thomas

Overview

The goal of this research was to determine if there a difference in seed growth (length of sprout, germination rate, and weight of each individual seed) between when a person holds an intention and transmits it to the seeds within close proximity versus from a distance.

The intentions of “gratitude” and “worthless” were used for the treatment in both the close proximity and the distance experiments. Definitions: Intentions are defined as affecting energy, projected into the field of consciousness.¹ Also, as stated in chapter 2, intention is describes as a mental state directed at a goal.² Worthless means destitute of worth; having no value, virtue, excellence, dignity, or the like; undeserving; valueless; useless; vile; mean; as, a worthless garment; a worthless ship; a worthless man or woman; a worthless magistrate.³ Gratitude is defined as the state of being grateful; warm and friendly feeling toward a benefactor; kindness awakened by a favor received; thankfulness.⁴ These words were chosen based on their words’ ability to elicit a powerful emotion in the PI. Strong thoughts and emotions may actually create a kind of energy structure known as a “thought form.”⁵ “Since all energy vibrates and oscillates at different rates the human body is really composed of different kinds of vibrating energy.”⁶ Tiller states in his paper *Energetic/Information Healing* “that healing via the use of various fields is distinct from the use of particular chemicals. The discrimination and detailed nature of the specific fields involved are largely unknown to us at the present

time but their presence is not. What is important to us is that they can be intentionally sculpted by the healer to have a pattern, and thus information, as well as amplitude, and thus energetic power.⁷ This suggest, therefore that thought has a signature vibration. Intention is focused thought. According to researcher Marilyn Schlitz, intentions are purposeful mental influences that are “the projection of awareness, with purpose and efficacy, toward some object or outcome.”⁸ It was the goal of the PI to create unambiguous intentions that would affect the germination and growth of the seeds. The PI created a clear positive or negative emotion and transmitted that emotion onto the zucchini seeds. In the close proximity experiment, the intention was administered within 10 inches of the projected intention. While the PI was in the physical presence of the seeds it allowed for greater concentration. For the distant experiment the PI used a picture of the seeds, which was placed at a 10 inch distant in front of the PI for greater concentration.

The use of the intentions by the PI consisted of two twenty-minute sessions, twice daily, for a total of 40 minutes daily for each condition (positive and negative intention). In the first experiment the proximity to the Petri dishes was ten inches and in the second, the proximity to the Petri dishes was five miles. The PI would meditate ten minutes prior to treatments, allowing her to feel increased calm and focus. A positive treatment started with an image the PI was grateful for, such as playing with her grandchildren. As the PI experienced gratitude, other images came forth to enhance the existing emotion. Approximately three to five minutes into the treatment, the images of gratitude would fade away and the PI would continue to focus on the feeling vibration of gratitude, transmitting it to the seeds. In contrast, the negative treatment intention word used was

“worthless.” This word conjured images and emotions of genocide, for example the Holocaust, Native American massacres, slavery, etc. As with the above intention, within three to five minutes into the treatment the images faded and the feeling vibration of “worthless” remained. The PI then projected the feeling vibration of worthless to the seeds.

The intentionality experiments were performed consecutively on a total of 75 black zucchini squash (*Cucurbita pepo*) seeds divided into three groups of 25 seeds each. In the first experiment, each sample of 25 seeds was contained in a plastic Petri dish. One sample of 25 seeds was set in close proximity (ten inches) to the PI who held a positive intention (gratitude). Another sample of 25 seeds was set in close proximity (ten inches) to the PI who held a negative intention (worthless) and the third sample was the control that received no intention. A treatment consisted of (1) consciously manifesting a strong emotional response to the negative and positive intentions, (2) letting go of all other thought (3) focusing intention on the seeds, and (4) staying grounded in the intention for twenty minutes.

When that experiment was complete, a second experiment was conducted in which the intentions were administered from a distance of five miles from the target Petri dishes. Three samples of 25 seeds each were created as in the first, proximal experiment; one sample was given a positive intention (gratitude), another sample was given a negative intention (worthless) and the third sample was the control that received no intention.

Procedure

Seeds

The seeds of this study were black zucchini seeds. Baseline weights and length were taken for each individual seed pre/post experiment.

Fifteen packages of black zucchini seeds were ordered through the internet from Henry Field's Seed and Nursery Company for the two experiments that were performed consecutively. All seeds were from Lot D and the country of origin was the USA.

Zucchini seeds were chosen because of their prior use in energy-based healing experiments. Also, these seed types sprout quickly; within four to 14 days and their sprouts are easily visible. Four packages of seeds were opened and placed in a stainless steel bowl. The PI examined the seeds and those that appeared damaged, discolored, and/or smaller or larger than average were taken out of the selection. The seeds were then mixed together in the bowl. A handful of randomly selected seeds were chosen and 75 seeds were placed in three separate Petri dishes with each dish containing 25 seeds. Each individual seed in each of the three Petri dishes was numbered one through 25 with a fine point Sharpie permanent marker. Each of the 75 seeds was weighed pre and post experiment, using an electronic scale (brand and model: Mettler PM 100) that was calibrated July 26, 2006. The treatment and control seed groups were randomly assigned by an independent individual who chose which Petri dish was to receive the positive intention, which would receive the negative intention and which Petri dish would be the control.

The seeds were germinated in 100 mm diameter, empty, sterile, plastic, Petri dishes. Each of the three Petri dishes received 5 mm of spring bottled water. To assure

that each seed was moist, the covered Petri dish was swirled five times, the lid was taken off and the seeds were arranged with approximate equal space between each seed.

Samples were placed on the top shelf of the indoor greenhouse six inches apart.

In each experiment, a seed was counted as sprouted when the radical (root shoot) pierced and was visible through the testa (seed coat). Each of the three Petri dishes were labeled; the seed group receiving a positive intention was marked with a small pink round paper dot and the negative intention seed sample was marked with a yellow dot. The control seed sample was not marked.

In experiment number one, the intentions were administered in close proximity. The PI sat 10 inches from the seeds receiving the intentions. In experiment number two, the intention was transmitted to the seed groups from a car, at a distant of five miles.



Figure 1. Photograph of Black Zucchini Seed Showing where they sprout.

Intention (independent variable)

The independent variable for this study was positive and negative intention. In both experiments, the PI administered the positive intention first, beginning at 7:30a.m. The negative intention was then administered at 7:55am. Twelve hours later at the next treatment, the negative intention was administered first at 7:30 p.m., followed by the positive intention at 7:55 p.m. The intentions continued to be administered and alternated every 12 hours for 96 consecutive hours.

To administer the intention in close proximity the Petri dish containing the negative intention seed group was taken from its place on the greenhouse shelf and carried to a card table ten feet away. The card table measured 36 inches by 36 inches wide by 30 inches high. The PI sat in a chair 10 inches in front of the negative intention seed group. The negative intention was held for 20 minutes. Then the Petri dish was returned to the greenhouse shelf from which it came. The same process was followed with the positive intention seed group. During this entire process, the third group of seeds (the control group) remained on the shelf in the greenhouse. A seed was counted as sprouted when the radical (root shoot) pierced and was visible through the testa (seed coat) as observed by the PI.

The second experiment involved sending the same positive and negative intentions to a new set of seed samples from a distance of five miles. The PI drove to a YMCA parking lot in a suburban area of Minneapolis that was five miles from where the seed groups were located. In this experiment, the three groups of seeds remained on the shelf in the greenhouse. Pictures of the positive and negative seeds were taken prior to watering and placement on the greenhouse shelf. The picture of the negative intention seed group was used by the PI to do the 20 minute negative intention and then the picture of the positive intention seed group was used to do the 20 minute positive intention. The PI administered the negative intention first and thereafter the intention was alternated as to which sample group received their treatment first during the session.

Monitoring

The application of the intention for both experiments was administered by the PI for 20 minutes every 12 hours. One application was at 7:30 AM and one was at 7:30 PM

for 96 hours consecutively. Seeds sprouts were manually counted every 12 hours, always at the same time of day. Monitoring in this study consisted of recording temperature and humidity every 12 hours and digitally photographing the seeds every 48 hours.

Growth Room

The experiments took place in the lower level of the PI's residence in the Midwest. The entire level of the home where the growth room was located measures 40 feet x 56 feet. The growth room measured 18 feet x 10 feet. Two of the walls in the growth room are concrete block, and the other two walls are sheet rocked. Two windows measuring 15 inches x 32 inches each were blocked of all natural sunlight with Styrofoam insulation. The greenhouse itself within the growth room was a World Factory Deluxe Greenhouse measuring 27 inches by 19 inches by 62 ½ inches and consisted of four shelves housed in a power coated steel frame and a zipped clear cover. A digital data logger was mounted in the growth room ten feet from the greenhouse. It recorded temperature and relative humidity. Temperature and relative humidity data were recorded every 12 hours. The digital data logger was located in the center of the growth room and away from walls to ensure air circulation.



Figure 2. Greenhouse used to house zucchini seeds.

Figure 3. Placement of the seeds on shelf.

Materials

The black zucchini seeds were purchased through Henry Field's Seed and Nursery Company. This vendor was selected on the basis of their positive reputation for providing quality seeds. The company has been in business since 1892. A 24 inch florescent tube by Ott-Lite Vision Saver Lighting, Model #20LTV1P, was used to ensure equal lighting to all seed sample groups. This florescent tube is marketed as "natural sunlight" and has been calibrated against standards set by the National Institute of Standards and Technology in Spring, 2005.⁹ The World Factory Deluxe Greenhouse measuring 27 inches x 19 inches x 62-1/2 inches was chosen for its small size. A Radio Shack indoor/outdoor thermometer with an indoor humidity gauge, Catalog Number 63-1032 was used to monitor temperature and relative humidity.

Methods of Data Collection and Analysis

In both experiment number one and experiment number two, the number of seeds that had sprouted were counted every 12 hours and the data logged. Photographs of each sample group were taken every 48 hours in both experiments.

Data included the number of the seeds sprouted, and sprout length and weight of each individual seed in each of the six Petri dishes. A split plot or mixed analysis of variance (ANOVA) was used in the analysis of the weight of independent or correlated samples. A 2X3 Factorial ANOVA was used for length, (there were no repeated measures, as just final lengths of the sprouts were looked at).

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CHAPTER 4: Results

There are very few human beings who receive the truths, complete and staggering, by instant illumination. Most of them acquire it fragment, on a small scale, by successive development, cellularly, like a laborious mosaic. –Anais Nin (1969)

Independent Variable

The independent variable for this study was positive and negative intention.

Seventy-five seeds were designated to one of three Petri dishes, each containing 25 seeds. One Petri dish received positive intention, one received negative intention and one was the control. The experiment was run twice. Sample A received the intention in close proximity measuring 10 inches. Sample B received the intention at a distance of five miles.

The goal of this study was to determine whether length and weight of sprout would vary as a function of intention and proximity. In line with this, two analyses of variance (ANOVA) procedures were conducted. To assess the effect of intention and proximity on sprout length, a 2 x 3 between-subjects ANOVA was conducted. To determine the effect of intention and proximity on seed weight, a 2 x 2 x 3 mixed ANOVA was conducted where intention and proximity were the between-subjects factors and seed weight before and after the study was the within-subjects factor.

The experiment yielded mixed results. The weight increase of seeds receiving positive intent was significantly greater than the weight increase of seeds receiving negative intent ($p < .001$). However, there was no significant difference in seed stem length between the positive and negative groups. Stem length increase was greater in the groups of seeds that received intention from a distance when compared groups of seeds that received intention at close proximity ($p < .001$). Intentions both positive and negative

together had a statistically significant affect on weight, when compared to control (p<.001).

Sprout Length as a Function of Intention and Proximity

The means and standard deviations for each of the conditions are presented in Table 1. The overall findings of the 2 x 3 between-subjects ANOVA are presented in Table 2 while the findings elucidating the differences between the groups are presented in Table 3. The findings in Table 2 indicate that there was a statistically-significant difference among the groups (F = 15.75, p <.001). As the findings in Table 3 suggest, the difference was due to the proximity manipulation. Only proximity had an effect on sprout length (F = 39.06, p < .001). In particular, mean sprout length was longer when the intentions were initiated from a distance (M = .37 ml) than when intentions were initiated close to the germination area (M = .12 ml).

Table 1. Means and Standard Deviation for Sprout Length (in milliliters) as a Function of Intention and Proximity.

Group	Mean	N	SD
Close			
Control	.12	25	.15
Negative	.11	25	.13
Positive	.12	25	.12
Distant			
Control	.43	25	.25
Negative	.31	25	.23
Positive	.37	25	.17

Table 2. Overall ANOVA Results for Sprout Length as a Function of Intention and Proximity.

Model	df	MS	F	Sig.
Regression	5	.515	15.747	.000
Residual	144	.033		

$R^2 = .353$

Adjusted $R^2 = .331$

Table 3. ANOVA Contrasting Results for Sprout Length as a Function of Intention and Proximity.

Contrast	F	Sig.
Close vs. distant (Proximity)	39.06	.000
Control vs. negative and positive (C1)	3.37	.068
Negative vs. positive (C2)	.75	.388
Proximity x C1	1.75	.188
Proximity x C2	.53	.468

Seed Weight as a Function of Intention and Proximity

The means and standard deviations for each of the conditions are presented in Tables 4 and 5. The 2 x 2 x 3 ANOVA findings are presented in Table 6. The findings indicate that there was a statistically-significant difference between the control condition and the positive and negative conditions, on average ($F = 5.568, p < .05$). Specifically,

the mean weight of the seeds that were not exposed to any intentions was lower ($M = .18$ grams) than the mean weight of the seeds that were exposed to either a positive or negative intention ($M = .19$ grams). Further, the findings show that, as expected, there was a significant difference between mean pre-test ($M = .14$ grams) and mean post-test weights ($M = .23$ grams; $F = 1464.33$, $p < .001$).

The findings in Table 6 indicate, however, that there were significant interaction effects between time and condition. First, it appears that the difference in mean pre-test and post-test weights varied across intention conditions ($F = 13.12$, $p < .001$). As illustrated in Figure 1, the difference in pre-test and post-test weight for the control condition (difference = .08 grams) was smaller than the difference in pre- and post-test weight for the negative and positive conditions (difference = .10 grams). Second, the difference in mean pre-test and post-test weights varied across negative and positive intention conditions ($F = 16.85$, $p < .001$). As illustrated in Figure 2, the difference in pre-test and post-test weight for the negative condition (difference = .09) was smaller than the difference in pre- and post-test weight for the positive condition (difference = .10).

Table 4. Pre-test Means and Standard Deviations for Seed Weight (in grams) as a Function of Intention and Proximity

Group	Mean	N	SD
Close			
Control	.14	25	.03
Negative	.14	25	.03
Positive	.14	25	.03
Distant			
Control	.14	25	.02
Negative	.15	25	.02
Positive	.15	25	.03

Table 5. Test Means and Standard Deviations for Seed Weight as a Function of Intention and Proximity.

Group	Mean	N	SD
Close			
Control	.22	25	.04
Negative	.22	25	.04
Positive	.24	25	.05
Distant			
Control	.22	25	.04
Negative	.24	25	.03
Positive	.26	25	.05

Table 6. ANOVA Results for Seed Weight as a function of Intention and Proximity

Model	df	MS	F	Sig.
Between Groups				
Close vs. distant (Proximity)	1	.006	3.415	.067
Control vs. negative, positive (C1)	1	.011	5.568	.020
Negative vs. positive (C2)	1	.007	3.764	.054
Proximity x C1	1	.003	1.376	.243
Proximity x C2	1	.000	.019	.889
Error	144	.002		
Within Groups				
Pre- vs. post- (Time)	1	.586	1464.337	.000
Error	143	.000		
Time x Proximity	1	.000	2.047	.155
Error	143	.000		
Time x C1	1	.005	13.118	.000
Error	143	.000		
Time x C2	1	.007	16.852	.000
Error	143	.000		
Time x Proximity x C1	1	.001	3.158	.078
Error	143	.000		
Time x Proximity x C2	1	.000	.010	.919
Error	143	.000		

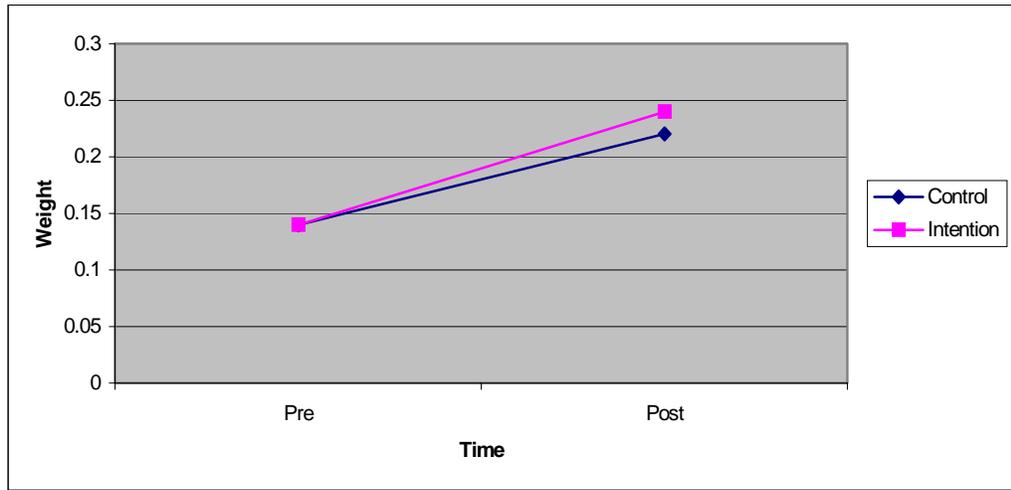


Figure 4. Seed Weight (in grams) as a Function of Time and Intention (Control vs. Intention)

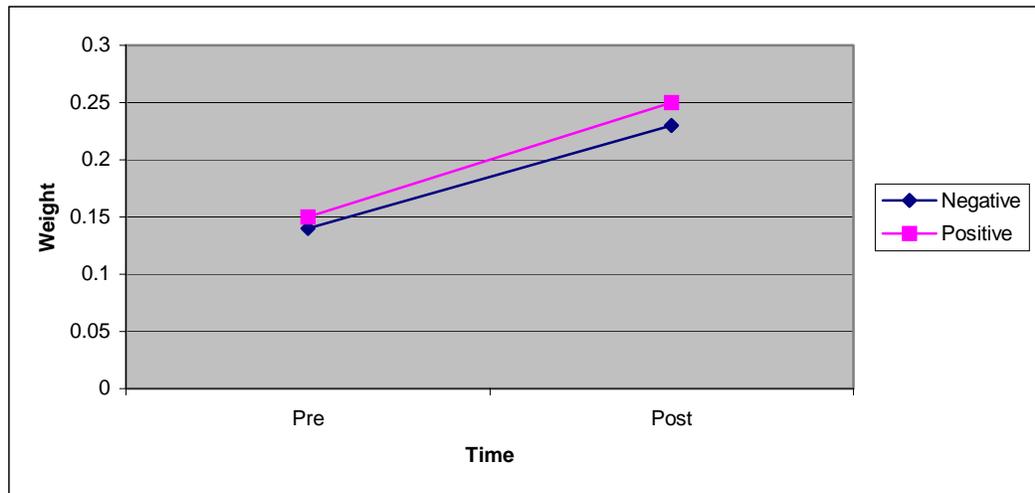


Figure 5. Seed Weight (in grams) as a Function of Time and Intention (Negative vs. Positive)

Zucchini seeds were photographed from Experiment A (close proximity with positive, negative and control intention) every 48 hours.



FIG 5: Zucchini Seeds zero hours.

Figure 6. Experiment A (close proximity with positive, negative and control intention) at zero hours.



FIG 6. Zucchini Seeds at 48 hours. Negative intention. 2007 7 4

FIG 6. Zucchini Seeds at 48 hours. Control. 2007 7 4

FIG. 6. Zucchini Seeds at 48 hours. Positive Intention. 2007 7 4

Figure 7. Experiment A (close proximity with positive, negative and control intention) at 48 hours.



Figure 8. Experiment A (close proximity with positive, negative and control intention at 96 hours.

Zucchini seeds from Experiment B (distant proximity with positive, negative and control intention) were photographed every 48 hours.

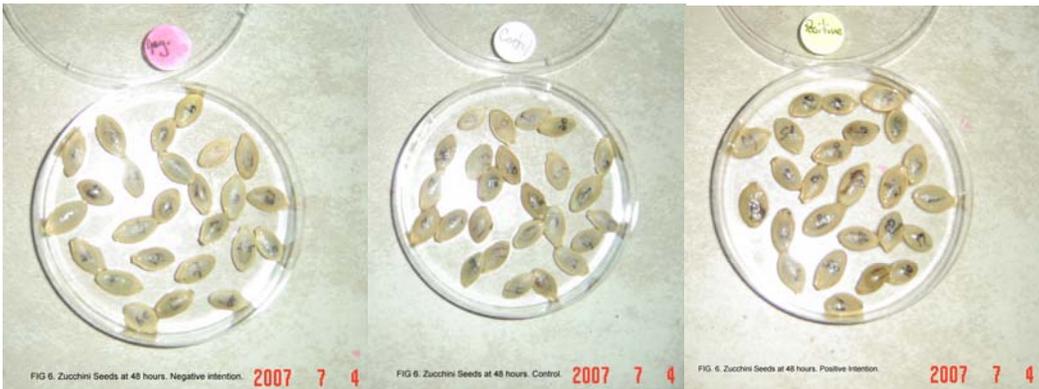


Figure 9. Experiment B (distant proximity with positive, negative and control intention) taken at zero hours.



Figure 10. Experiment B (distant proximity with positive, negative and control intention) taken at 48 hours.



Figure 11. Experiment B (distant proximity with positive, negative and control intention) taken at 96 hours.

CHAPTER 5: DISSUSION

The most exciting phase to hear in science, the one that heralds the most discoveries, is not 'Eureka!' (I found it!) but "That's funny." – Isaac Asimov

The goal of this research was to determine if there is a difference in seed growth (length of sprout, germination rate, and weight of each individual seed) if a person sits in close proximity or distant proximity holding the intention, and transmitting to the seeds.

In this study, a pre/post-test control group design was utilized. The independent variable included two daily, twenty-minute treatments, one using a positive intentional thought and one using a negative intentional thought. Both experiments were run for a total of 96 hours each. In both experiments, the PI administered the positive intention first, beginning at 7:30a.m. The negative intention was then administered at 7:55am. Twelve hours later at the next treatment, the negative intention was administered first at 7:30 p.m., followed by the positive intention at 7:55 p.m. The intentions continued to be administered and alternated every 12 hours for 96 consecutive hours.

In the first experiment, the intentional positive and negative thoughts were administered at a distance of 10 inches from the dependent variable. In the second experiment, the intentional positive and negative thoughts were delivered from a distance of five miles from the dependent variable. The dependent variable was the result of the measured weight of each individual seed and the length of each seed's sprout.

Did intention have an effect on matter?

The experiment yielded mixed results. The weight increase of seeds receiving positive intent was significantly greater than the weight increase of seeds receiving negative intent ($p < .001$). However, there was no significant difference in seed stem length between the positive and negative groups. Stem length increase was unexpectedly greater in the groups of seeds that received intention from a distance when compared groups of seeds that received intention at close proximity ($p < .001$). Intentions both positive and negative together had a statistically significant effect on weight, when compared the control ($p < .001$).

The contradictory findings in this study allow for many questions. The PI suggests several possible reasons for the mixed results results. First, the framework for the effects of intention on living systems has many models, Relativity theories, such as the transmission model¹ presumes the effects of conscious intention to be mediated by an as-yet unknown energy signal and path facilitation. Gravity, according to general relativity theory, “warps” space–time which eases certain pathways of movement. Non-local entanglement,² drawn from quantum mechanics, postulates that people, like particles, can become entangled so they behave as one system with instantaneous and unmediated correlations across distance. Another model involves actualization of potentials. The act of measurement in quantum mechanics collapses a probabilistic wave function into a single outcome.³ These physics-type models are not suggested to be an explanation for the test results in this experiment. To be clear, intentional effects, whatever the proximity, cannot currently be adequately explained. However, the results of the current experiment correlate with controlled laboratory experiments involving non-

human living systems that have shown replication effects of intention on life forms including enzymes, yeast, and bacteria.⁴

Pilot Study

The pilot-study had seventy-five seeds that were divided into groups of 25 and designated to one of three Petri dishes, one for positive intention, one for negative intention and one control. The experiment was run twice. Sample A received intention in close proximity of 10 inches. Sample B received intention at a distance of five miles. There were two differences between the Pilot Study and the Final Experiment. In the Pilot Study, phrases were used for the intentions, and in the Final Experiment, a single word was chosen. The other difference was that in the Pilot Study, each Petri dish of 25 seeds was weighed as a whole, whereas in the Final Experiment, each individual seed was weighed. The positive phrase in the pilot study was, “the universe provides me with all I need, and I thrive.” The negative phrase for the pilot study was, “the universe is a dangerous place and resources are scarce.” The positive intention word in the Final Study was “gratitude” and the negative intention word in the Final Study was “worthless.”

It was revealed to the PI during the pilot study that a phrase produced a weak emotional response within the PI. Analysis of the pilot study was calculated by simple subtraction. Pre weight was subtracted from post weight. Weight was measured in grams. Pre-positive intention weight was 19.379 grams. Post-positive intention weight was 29.783 grams resulting in additional weight of 10.404 grams. Pre-negative intention weight was 19.1999 grams while post-negative intention weight was 28.444 grams resulting in additional weight of 9.245 grams. Pre-control group weight was 19.187

grams, and post control group weight was 31.103 grams, resulting in additional weight of 11.916 grams. The largest difference in post weight was between the negative intention group and the control group at 2.671 grams. As a result of the pilot study, an intention of increased intensity was utilized.

Experiment Study: Strengths

Several components of the present study have strengths that contribute to its value as a solid piece of research. They include a trained principle investigator (PI) that has the respect of the Healing Touch® and massage community. This is mentioned because both of these activities require a long term focus of intention, which has been an excellent training ground for this research study.

Strength of the study was the utilization of an independent assistant who weighed each seed pre/post experiment and who identified which seeds were chosen for each group, positive, negative and control. This procedure was done at another location away from the PI, however the seeds were stored at the PI's residence prior to this procedure. Although it was not a double-blind study, many precautions were made to shield the seeds from unconscious preferences. For example, the PI was aware of her thoughts so that she would not project a positive or negative intention except at the designated time. The only person allowed in the greenhouse was the PI in order to shield the seeds from other people's intentions. The seeds were kept separate from the growing room in a sealed box in a dark closet until the day that the experiment commenced. All water came from the same bottle of Kirkland spring water. All seeds were from the same batch and lot number.

In this study, the intention had a statistically significant effect on the weight of the seeds $p. < 0.001$. A pilot study revealed the weakness of intentional phrases (“The universe provides me with all I need, and I thrive”, and “The universe is a dangerous place and resources are scarce”). Therefore, the phrases were replaced with single word intentions (“gratitude” and “worthless”).

The use of seeds as a dependent variable of intention provides advantages over human subjects. These advantages include inexpensive “recruiting,” the ability to establish a control group devoid of psychological effects, and the rapidity of germination time for zucchini seeds. It is easy to visually ascertain when they have sprouted.

Suggestions for Improvements

There are several factors that need to be addressed relative to this study that may be considered in subsequent replication studies, and therefore, may increase the overall strength of such studies. Factors to be considered include randomization study design, sample size, and environment. Each of these considerations will be discussed in more detail below.

- Based on the results of this experiment, it is believed that rigorous shielding and blinding procedures need to be part of any study of intention. High levels of control are difficult to achieve. Storing the seeds at a shielded location away from the PI would help prevent unintentional contamination that happens when a random thought occurs in the presence of the seeds and that thought is not part of the study. Preventing the seeds from having sensory contact with each other would help shield them from the influence of the other administered intentions.

- An experimenter could have the target in mind but not be aware of its location. This would allow for additional shielding between the target groups.
- A researcher who does not have prior knowledge as to the sequence of the experiment would help prevent contamination prior to the start of the experiment.
- Checking the experiment location for sound and vibration (e.g., music, traffic, voices, etc.) would help to prevent contamination from environmental sources.
- The current research had samples with an eight-inch separation between each Petri dish. It is plausible this might have made it difficult for the intention to be focused on the specific seed group and not affect the other seed groups.
- It is an interesting speculation that diverse seed types may respond to intention differently. A concurrent study using this method could clarify that not all matter received intention the same way.
- To determine if there is a difference between intention and staring, two simultaneous research studies could be conducted using either trained or untrained individuals.

The purpose of improved shielding and blinding is the prevention of sensory leakage. When targets and subjects are shielded from sequences and experiential trials, data integrity is improved.

A key challenge in conducting this research was controlling for the independent variable of intention. How does one establish what is actually going on in one's mind at all times? Moreover, because human behavior is dynamic, it is not reasonable to assume that the beliefs and intentions of the PI remain constant, or that the experimenter can be strictly shielded from influencing the research study.

In retrospect, in addition to the improved shielding already discussed, there are additional changes in the methodology that could possibly enhance the quality of the experiment. If only a positive intention was administered and it was shown to have an effect, then one can assume the same would be true if a negative intention were administered. Since Zucchini seeds sprout within four to 14 days it is possible that ending this experiment after 96 hours did not allow for the experiment to reach its saturation point. Holding the intention for longer than 20 minutes, and/or conducting the intention more frequently may bring about saturation level from the intention. Another possibility would be to conduct the study with the seeds planted in soil and looking at not just the length and weight of the seeds but also at the overall health and yield of the mature plant.

Any of these steps may have produced a different set of statistical results.

Design study

It is advisable to use a pre/post double-blind study when measuring the effects of intention on seed germination rate or on another living system. An emphasis by the PI was put on making a conscious attempt to not send the seeds positive or negative intentions other than at the pre-determined and designated times. However, the PI cannot account for unconscious thoughts, and it is plausible that unconscious intentions were transmitted. The goal of a double-blind study is to reduce the likelihood that expectancies and knowledge of the conditions could influence or account for the results.

Sample size of seeds

In the present study, there were a total of seventy-five seeds with 25 seeds per sample randomly placed into positive, negative and control groups. All conditions were collapsed together. A total of two trials, one measuring the effects of intention delivered

in close proximity and one measuring the effects of intention at a distance were run using a total of 150 seeds. It is advisable to increase the number of seeds in the study. When using live seeds, it is plausible that seeds may be damaged or defective and not detected by external clues of size, shape or color. A larger sample size may increase expected differences by contrasting conditions that are more likely to vary (stronger manipulations, sharper contrasts).

Environment

This research was conducted in the PI's home in the Midwest. The positive/negative intention treatments were administered twice daily at 7:30 AM and 7:30 PM. It is interesting to note the possibility of a relationship between local and sidereal time (time according to the stars rather than local clock time) and remote viewing quality. Researchers suggest that when and where sessions are conducted may be an important factor.⁵ Spottiswoode (1997) found that, "In an existing database of 1,468 free responses (clairvoyance test) trials, the effect size increased 340% ($p=0.1000$) for trials within 1 hour of 13.5h LST (local sidereal time) An independent database of 1, 015 similar trials was subsequently obtained in which trials within 1 hour of 13.5h LST showed an effect size increase of 450% ($p=0.05$) providing confirmation of the effect."⁶

Separation

Seed groups could be separated by at least one solid and permanent wall, and the seed groups could be alternated between separate rooms to ensure the randomization of extraneous factors. Marilyn Schlitz, PhD, prepared guidelines for studies on intention states that these factors that may have an effect on the outcome.⁷

Suggestions for Further Research

Although the present study shows no significant results for proximity and proximity- intention, much has been learned about the possible confounds and biases that could affect outcome. Replication studies on intention utilizing both close and distant proximity are needed. This research study hypothesized that one person's intention can interact with a living system, in close proximity or at a distance, and affect seed germination rate. Therefore, it presumed the existence of connections between all living matters. The following are suggestions for further research:

- Based on this experiment's results, it is believed that rigorous shielding and blinding procedures need to be part of any study of intention.⁸ High levels of control are difficult to achieve, mainly because there are many ways one can fool one's self. One way to shield is the use of a Faraday Cage. A Faraday cage is an enclosure formed by conducting material, or by a mesh of such material. Faraday cages shield 60 Hz (50 Hz) unwanted electromagnetic interference (EMI).⁹ Researchers Dibble & Tiller have presented evidence that intention imprinted electronic devices (IIEDs) interact and influence the pH of water. They reported changes of 0.5 to 1.0 pH units and pH oscillations of different periods. The device (IIEDs) was wrapped in Al-foil and stored in an electrically grounded Faraday cage to ensure isolation of the intention.¹⁰
- Folk legend has it that one is more intuitive during a full moon phase. It is fact that the gravitational attraction, and the centrifugal forces generated by the rotation of the Moon and Earth around a common axis creates the barycentre,

which is largely responsible for the tides on Earth. It is plausible that this force may influence intuition. Thus, it would be interesting to conduct a study of intention based on the full phase of the moon.

The possibilities of research on intention are endless and previous laboratory research warrant further serious study. However, the challenges that come with a topic that is laden with risk, unintended consequences and baffling mysteries can be both frustrating and joyful, and always accompany the exploration of new frontiers.

Energy Medicine, Spiritual Healing and Intention

Researcher Cleve Backster has pioneered studies showing that humans are interconnected with living organisms in significant ways.¹¹ Backster was the first to demonstrate that plants and other living organisms respond to changes in human emotions.¹² An intriguing line of energetic research currently is underway in the study of intention. Tiller claimed that accomplished meditators were able to imprint their intentions on electrical devices (IIED), which when placed in a room for three months would emit these intentions and create changes in pH and temperature even when the IIED was removed from the room.¹³ Scientists and practitioners are looking to healing practices and techniques that engage the whole person in this complex human experience.

In the exploration of intention and its effects on matter, Energy Medicine and Spiritual Healing philosophy recognizes that thought and intention are a part of our interconnectivity to the invisible world of energy and healing. In a quantum universe, the energy field in which a patient exists can produce healing without any need for a spatial or temporal connection.¹⁴ A quantum universe is a set of probabilities susceptible to influences of many factors including thought, will and intention. It is a universe in which

spontaneous remission of disease is possible.¹⁵ Many aspects of the approaches used in energy medicine are not cut from the fabric of the physical, quantifiable world of our outer senses. They are woven instead, of the inner sense of intuition, often including spiritual awareness, which is just as valid as our outer senses. To dismiss these aspects of our whole selves is to ignore the significant portion of information that is available to us.

Intentionality in healing is an evolutionary process; energy medicine is moving in a direction to demonstrate that by managing our thoughts and reactions, can we intentionally make the right chemical elixir to drive the brain and body from a constant state of stress to a state of regeneration and change. Franklin Loehr, who studies healing effects on plants, summarizes succinctly what has been repeated by others, “A thought is a thing.”¹⁶ By this he meant that thoughts produce effects in the physical world.

The effects of mental and spiritual healing are practiced by all cultures from pre-historic times to the present, but research in these practices and their underlying mechanisms is in its infancy. More and better quality research, both basic and clinical, is needed before these energetic healing processes can be understood with modern scientific concepts or perhaps new conceptual models will emerge.

Chapter 5 Endnotes:

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