

Magnetic field activity during psychic healing: A preliminary study with Healing Touch practitioners

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Qi is not magnetic field but “deep force” behind our observable dimension rather than existing physical quantity such as magnetic field.

(Seto et al., 1992)

...magnetic field changes are more easily detectable in close proximity (2-3 feet) to the subject (i.e., the focus of healer intent) rather than adjacent to the healer's hands. This observation led us to expand our study and to measure the magnetic field activity near to subjects and in rooms with bioenergetic practice (e.g., Tai chi, charismatic healing, meditation).

(Moga and Geib, 2009)

ABSTRACT: Psychic healing, involving the paranormal abilities of healers, has re-invented itself in the cultural mainstream as “energy medicine”. Energy medicine ‘biofield therapies’ such as Reiki, Qigong, and Healing Touch are administered by a healer who clears, balances and replenishes ‘life-energy’, sometimes with the assistance of nonphysical ‘guides’. A small number of studies have noted electric field surges and magnetic field (MF) oscillations in close proximity to the healers’ body, suggesting that electromagnetic field variations may be part of the energy healing mechanism. In the present study, I examine whether MF oscillations are present during Healing Touch (HT), an energy-based, biofield therapy. Low-frequency (0 - 40 Hz) MF activity was measured continuously with Hall-type gaussmeters in close proximity to healer-client pairs during HT sessions. MF activity observed during each HT session was compared with pre-session and post-session MF activity, and with MF activity during guided progressive relaxation (GPR) sessions without a healer and during mock HT sessions without a client. Qualitative analysis was used to identify potential relationships between MF activity, client symptoms, and healer descriptions of the client’s biofield. Low-frequency MF oscillations were observed during 24 of 26 HT sessions, and 14 of 16 GPR sessions. The amplitude of the MF oscillations ($B_{\text{peak-to-peak}}$) was significantly greater during the HT session and post-session periods, as compared to the pre-session period. $B_{\text{peak-to-peak}}$ showed no significant change across the GPR time periods. Large-amplitude MF oscillations > 1.0 milliGauss during HT were associated with healer/client qualitative reports of emotional release and clearing of the biofield. MF oscillations in the GPR sessions were typically low-amplitude, with 55% of oscillations occurring in the first 20 minutes of the session. Based on comments from the participants, the MF oscillations during the first 20 minutes of GPR may represent physical releases, as this part of the guided meditation focused on releasing tension in different muscle groups. Low-amplitude MF oscillations in the HT sessions showed some association with physical releases and

pain reduction. MF activity was extremely quiet during the mock HT sessions, particularly in cases where the HT practitioner reported being “heart-centered”. The results suggest that low-frequency MF activity may reflect the emotions and biofield qualities of the participants. Continuous recording of environmental variables, such as magnetic field activity, may be useful in the study of paranormal phenomena, such as psychic healing, psychokinesis, and remote viewing.

KEYWORDS: Touch—Therapeutic use, Electromagnetic fields, Emotions, Progressive muscle relaxation, Biofield, Parapsychology

I. Background: Biofield therapies and the electromagnetic emissions of healers

The majority of the research in parapsychology is focused on extrasensory perception (ESP), psychokinesis and survival studies (Irwin and Watt, 2007; Schock and Yonavjak, 2008). Psychic healing, involving the paranormal abilities of healers, has received less attention and study (Schouten, 1993). Psychic healing may be divided into three major forms: 1) pranic healing, involving a transfer of prana or life-energy to the healee; 2) mental healing, influencing the Mind of the sick person; and/or 3) spiritual healing, accomplished with the assistance of spiritual entities (Ramacharaka, 1934; Krippner and Achterberg, 2000). The Mind, or psyche, is essential to all forms of psychic healing, including pranic healing where prana is moved by the Mind of the healer. Many of the currently fashionable biofield therapies, such as Reiki, Healing Touch and Reconnective Healing, may be considered forms of psychic healing. For example, Healing Touch practitioners ‘serve as conduits for [life-energy] flow on behalf of the client’ and invite, “the presence of spiritual guides to infuse healing light” during the Healing Touch session (Hover-Kramer, 2009). Centering and setting an intention for the healing session, both of which involve the Mind, are also critical aspects of Healing Touch (Slater, 2009). The terms ‘energy healing’, ‘psychic healing’ and ‘biofield therapy’ are largely interchangeable, with ‘energy healing’ and ‘biofield therapy’ in more common usage.

Despite popular interest in biofield therapies such as Healing Touch (e.g., Crute, 2008), there is no accepted scientific mechanism to explain energy healing, and little understanding of the putative energies that may be involved. According to Jonas and Crawford (2004), the major factor impeding energy healing research is, “the lack of a consistent, objective and reliable measure of the healing presence” or energies involved in healing.

Psychic healing/energy healing may involve some type of electromagnetic radiation (Oschmann, 2000). To test this hypothesis, a small number of studies have measured the electromagnetic fields and emissions associated with healers. Green and colleagues (1991) noted significant surges in electrostatic body potential of healers during non-touch therapy sessions. Joines et al. (2013) found that exceptional individuals can generate high levels of photons in the ultraviolet (UV) range. In a study of Qigong healers, Seto et al. (1992) observed a 4 – 10 Hz oscillation in the magnetic field (MF) adjacent to the palms of 3 out of 37 healers’ hands. Similarly, Schwartz and colleagues (2007) reported oscillations in the MF adjacent to the hands of Reiki practitioners, although a more recent study by this group (Baldwin et al., 2013) could not duplicate these findings with 3 Reiki masters. Zimmerman (1985) observed MF variations adjacent to the hands of a Therapeutic Touch practitioner, using a sensitive SQUID magnetometer in a magnetically shielded room.

Recently, we observed low-frequency MF oscillations during hands-on healing and distant healing of mice with experimentally-induced tumors (Moga and Bengston, 2010), and during bioenergetic practices such as Tai Chi (Moga and Geib, 2009). The MF oscillations in these experiments were near-identical in appearance to the MF waveform reported by Zimmerman (1985).

In the present exploratory study, I examine whether MF oscillations are present during Healing Touch (HT), an energy-based, biofield therapy (Wardell, 2002). Healing Touch (HT) incorporates a variety of energy healing techniques derived from different healers, including techniques first described by Brugh Joy MD; Barbara Brennan MS and Janet Mentgen RN (Wardell, 2002). HT practitioners receive a standardized education endorsed by the American Holistic Nurses Association, which includes 5 weekend workshops and a 100-client session practicum. During HT, practitioners place their hands on joints and energy centers (termed “chakras”) along the midline torso, as well as move their hands above the body, in various configurations, with the overall goal of clearing and balancing the energies of the client’s body. The HT practitioner chooses specific techniques or “interventions” based on the client’s symptoms and goals. Clinical studies have shown that HT interventions are helpful for: cardiac surgery patients, significantly reducing their anxiety and hospital length-of-stay (MacIntyre et al, 2008); radiation oncology patients, reducing their pain and enhancing their vitality (Cook et al., 2004); and healthy adults, whose physiological variables indicate a role for HT in stress reduction and immune enhancement (Wilkinson et al., 2002; Maville et al., 2008).

After the first set of experiments (with healer and client), I did two additional sets of experiments to determine if MF oscillations are present during, 1) guided progressive relaxation (client only), and/or 2) mock HT (healer only), with the goal of finding appropriate controls for MF activity during HT. All of the MF recordings were done under natural conditions where HT is regularly practiced. Previous investigators have found that healing studies have a greater likelihood of success under natural conditions (Dossey, 2008) or with sufficient acclimation to laboratory conditions (Monzillo and Gronowicz, 2011). The present findings are preliminary and will need to be repeated in a magnetic field-free environment to be conclusive. However, given that previous studies (e.g., Seto et al) have noted MF oscillations with healers in the open environment, the present findings may have some validity and may be helpful in the design of future studies.

II. Methods: Magnetic field recording during Healing Touch, progressive relaxation and mock HT

Healing Touch practitioners were recruited locally from [Healing Touch of Central Indiana](#), and across the Midwestern U.S. from the online databases of [Healing Beyond Borders](#) and [Healing Touch Program](#). Healers were selected for participation based on their training (Level 4 and above) and their current practice of HT. Client participants for the Healing Touch and relaxation experiments were recruited through HT practitioner referrals, flyers in an integrative medicine clinic, and emails to a cardiovascular fitness group and two mind-body interest groups. All participants signed an informed consent form describing the conditions of the experiment. The study protocol was approved by the Indiana University-Purdue University Indianapolis Institutional Review Board.

Study locations were sites where Healing Touch is regularly practiced (site abbreviations indicated in parentheses). Sites included two medical clinics, St. Francis Pain Clinic in Beech Grove, IN (IN1) and The Maple Center for Integrative Health in Terre Haute, IN (TH), and four healer homes in the metropolitan areas of Minneapolis, MN (MN1, MN2 and MN3) and Indianapolis, IN (IN2), for a total of six different locations. The progressive relaxation experiments were performed at The Maple Center for Integrative Health in the same clinical exam room used for the Healing Touch sessions. The mock HT experiments were also performed at The Maple Center for Integrative Health, but in two different clinical exam rooms.

Each HT practitioner treated one to four volunteer clients in a single day, with each HT session lasting 40-65 minutes. In four experiments, two HT practitioners worked together on a single client. For each HT session, the HT practitioner or practitioners did an intake assessment, which included patient

symptoms, a brief health history and assessment of the client's energy field. Based on this assessment, the HT practitioner or practitioners chose the appropriate HT interventions for the individual client. The HT session was done with only the practitioner and client present. After each HT session, the HT practitioner documented the interventions used on a standard HT assessment form, and filled out a healer questionnaire describing his/her current physical, emotional and mental health on a Likert scale, and whether they had experienced any energy flow or physical sensations during the healing session. Additional qualitative descriptions of the session were elicited during a post-session semi-structured interview involving healer, client and principal investigator.

In the guided progressive relaxation (GPR) experiments, the client listened to a CD without a healer present. The client participants were positioned on a massage table in the same room used by healers and clients in the HT sessions in Terre Haute, IN. There was no centering or setting of intention by a healer, as in the HT experiments. With stereo headphones, participants listened to the Hemi-Sync Relaxation CD (ISBN#: 1-56102-527-5), 50-minutes in duration, which contains verbal guidance in progressive relaxation. After the session, clients were asked for a qualitative description of their session experience.

In the mock HT experiments, an HT practitioner treated an imaginary illness over an empty massage table for approximately 50-minutes. The healer chose an imaginary client complaint (e.g., rheumatoid arthritis, sinusitis). The healer began the session with an energy assessment of the imaginary illness (using pendulum and hand scan), followed by HT interventions appropriate for treatment of the complaint and its associated energy imbalance. The HT interventions during mock HT involved movement around the massage table, typical of an HT session with a client. After the session, healers were asked about any feelings or emotions they may have felt during the session.

Magnetic field activity during the HT, GPR and mock HT sessions was recorded with two Hall-type, single-axis, DC gaussmeters (model IDR-321, Integrity Design & Research Corporation). The gaussmeters were positioned on each side of the client, approximately 2-3 feet away, with the Hall sensor pointed towards the client's heart region. The gaussmeters were connected to a laptop computer via shielded cables and a data recorder (model 214, iWorx Systems). Magnetic field activity was continuously recorded with Labscribe1 software (iWorx) up to 2 hours before each session to establish a baseline, during the session, and after each session for approximately 1 – 5 hours. The sampling rate was 1000 samples per second.

All of the experiments were done on days when the earth's magnetic field was relatively quiet, with a geomagnetic field index of $K_p \leq 3$. $K_p=5$ is considered to be a magnetic storm. To further minimize environmental fluctuations, the experiments (with one exception, a mock HT experiment) were conducted on days with a sunny, partly cloudy or overcast sky, with no precipitation, and no lightning or thunderstorm activity. Cell phones of participants were turned off.

For each session (HT, GPR or mock HT), MF activity (0 – 40Hz) before the session ("pre-session") was compared with MF activity during ("session") and following the session ("post-session") by analyzing the number of MF waves, and peak-to-peak variability in MF strength for each time period. For magnetic fields, \mathbf{B} , peak-to-peak amplitude, $\mathbf{B}_{\text{peak-to-peak}}$, is defined as the change between the peak (highest amplitude value) and the trough (lowest amplitude value). The maximum $\mathbf{B}_{\text{peak-to-peak}}$ values for pre-session, session and post-session within the HT and GPR experiments was averaged and statistically compared with the students' T-test. Fast Fourier Transform software (Sigview) was used for frequency analysis of MF activity. Qualitative content analysis was used to identify biofield characteristics and patient symptoms associated with high-amplitude (>1.0 milliGauss) MF oscillations, and to compare healer's self-report of physical and emotional states with changes in MF activity.

IIIa. Experiment 1: Magnetic field activity during Healing Touch

Questions asked during this set of experiments were: 1) Are MF oscillations detectable in the unshielded environment where HT is normally practiced? Are the MF oscillations an artifact of a particular environment or are they consistent across clinical settings? Do the MF oscillations vary by healer or session content?

Thirteen healers (designated A – M) participated in this set of experiments. Seven of the 13 healers were certified HT practitioners at the time of the study, and the remaining 6 healers had completed level 4 training in Healing Touch. The client participants that received Healing Touch (n=26) were predominantly female (92%), and ranged from relatively healthy individuals suffering from stress or minor complaints to chronically ill individuals and cancer patients.

The duration of the Healing Touch sessions ranged from 39 - 73 minutes, with an average session duration of 55 minutes. MF activity (0 – 40 Hz) during the HT experiments consisted of ‘baseline’ or low-amplitude, asynchronous periods (Figure 1-A) interspersed with periods of magnetic field (MF) oscillations (Figure 1-B).

Figure 1. Examples of Magnetic Field Activity

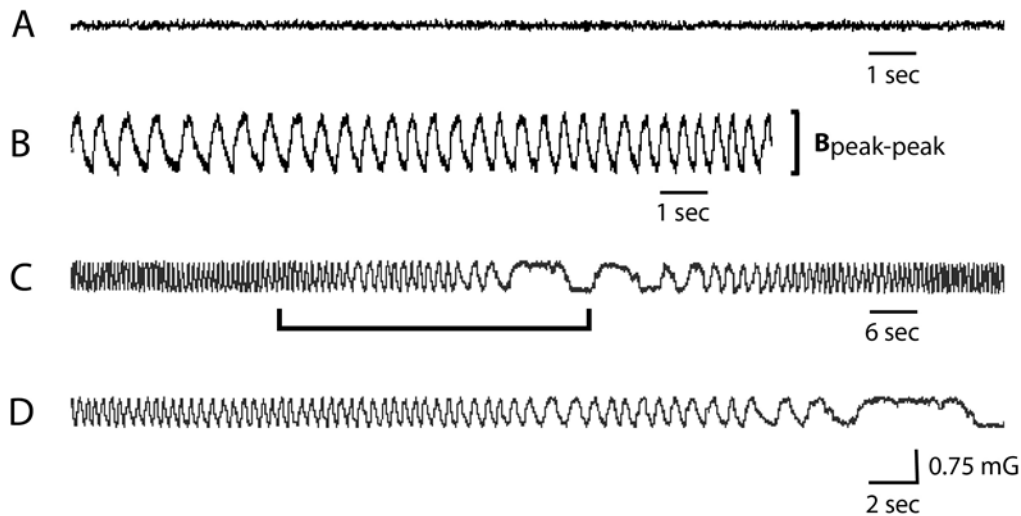


Fig. 1 Examples of magnetic field activity observed during the three different experiments. A. Low-amplitude asynchronous magnetic field activity (i.e., “baseline”). B. MF oscillations. The amplitude of the oscillations, from peak to trough, is defined as $B_{\text{peak-peak}}$. C. MF wave consisting of MF oscillations of descending frequencies followed by ascending frequencies. The bracketed area is expanded in D. D. Descending frequencies of MF oscillations within a MF wave.

The MF oscillations varied in amplitude, $B_{\text{peak-peak}}$, depending on the HT session. The MF oscillations were not random, but were organized in waves, which resembled symmetrical “chirp waves” found in electronic applications, although of much lower frequency. “Chirp waves” are defined as sinusoidal waveforms that decrease and/or increase in frequency over time. The MF waves in the present experiments began as an increase in amplitude, $B_{\text{peak-peak}}$, with MF oscillations in the 26 – 32 Hz range, followed by a gradual decrease in oscillation frequency, slowing to less than 1 Hz, and then a reversal, with an increase in frequency and then a decrease in $B_{\text{peak-peak}}$, returning to baseline. A representative MF

wave is illustrated in Figure 1-C. The bracketed section in Figure 1-C is expanded in Figure 1-D, illustrating the decreasing frequency of the MF oscillations. In Figures 1-C and 1-D, the portion of the trace containing the very slow oscillations is the center of the wave, and represents the transition point between decreasing and increasing frequencies.

As representative of the HT experiments, I provide narrative detail and illustrate MF activity for 11 HT sessions on 3 days involving 4 different healers (Figures 2- 4). Healing Touch interventions are capitalized (e.g, Chakra Connection). In each of the figures, the HT practitioners (“healers”) are identified by letters, A – M, and the location of the HT sessions, and the clients by numbers, 1 – 26. For each HT session, I select representative MF traces (40-sec each) from one side (left or right), indicating the time (Minutes) that the trace appears in the MF recording and within the HT session (parentheses).

Figure 2. Healing Touch: Healer E, Location TH

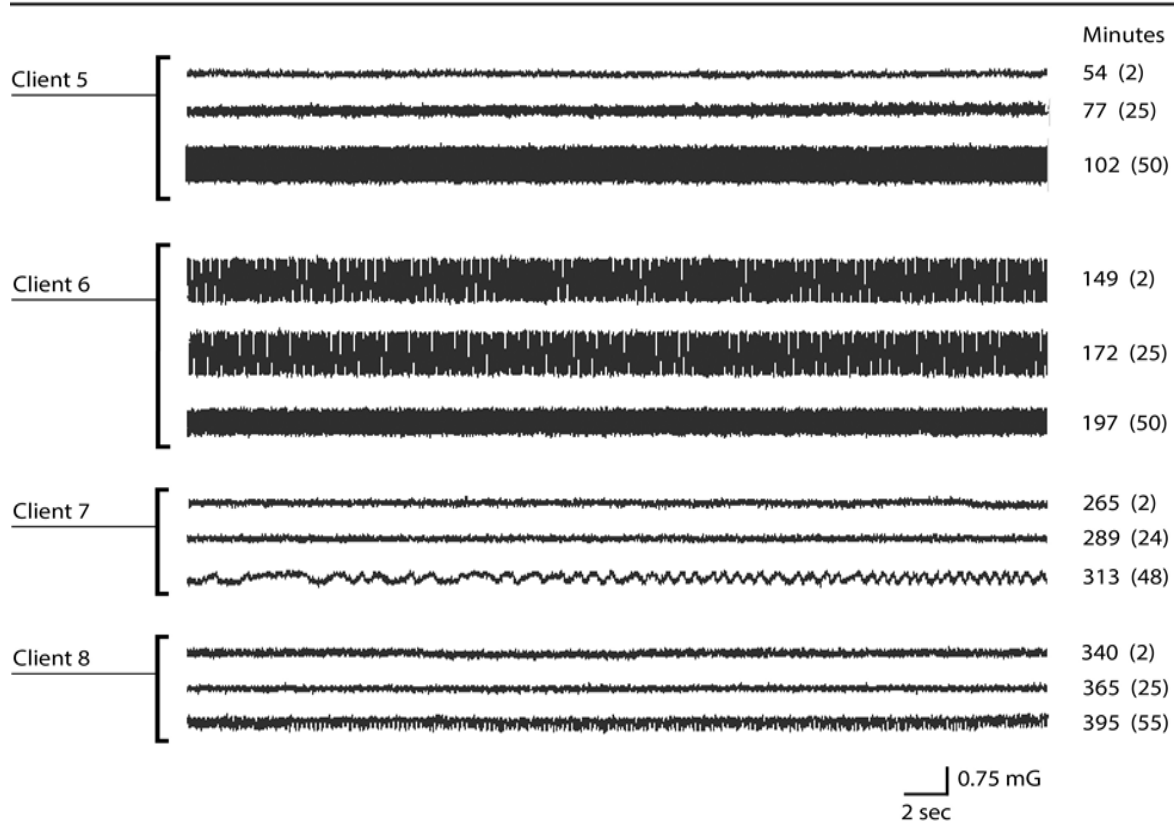


Fig. 2 Representative traces of MF activity during four HT sessions with Healer E, and Clients 5, 6, 7 and 8, at location TH. All traces are MF activity on the left side of the client. “Minutes” indicates time within the day’s continuous MF recording, with time within the HT session indicated by parentheses. Note the increase in $B_{peak-peak}$ during the first HT session (Client 5) which continued into the second HT session. A low-amplitude MF wave is visible at 313 minutes.

In the first representative case, Healer E, a certified HT practitioner, gave Healing Touch to four different clients (clients 5 – 8) on a single day in the Terre Haute, IN medical clinic (Figure 2). For clients 5, 6 and 7, the HT session was their first experience of Healing Touch and of energy healing in general. Client 8 had recently received six Healing Touch sessions for pain and mild depression. The first client (Client 5) presented with work stress and a painful right leg varicosity. During the pre-treatment energetic assessment of Client 5, Healer E felt abnormal sensations in the client’s biofield, including static in the head area, and prickly, tingly sensations over most of her body with congestion over the right upper leg. During the session, Healer E felt three waves of energy from the client as she opened the solar plexus point on the client’s feet at the beginning of the Full-Body Chakra Connection. Later, she felt “high heat”

in her right palm while doing Hands Still on the client’s right thigh. Magnetic field oscillations developed on both sides beginning about 22 minutes into the session, and steadily increased in amplitude ($B_{\text{peak-peak}}$), continuing into the second session with Client 6 (Figure 2). Client 6 presented with lifelong asthma. During the pre-treatment energetic assessment, the healer described a “remarkably heavy, thick, contracted field in the throat and shoulder area” of the client. The healer reported that it took her, “a long time to clear and expand [the] field” during this session using Hands-in-Motion, Ultrasound to the upper chest and lungs, and Etheric Clearing. The build-up in MF intensity, begun in the first session, finally released as high-amplitude MF waves at 11 minutes (right side, not shown), and at 24 and 31 minutes (left side, Figure 2), in the second session. The MF activity gradually returned to baseline during the lunch break between Clients 6 and 7.

The third and the fourth HT sessions with Healer E were relatively quiet with no high-amplitude MF activity (Clients 7 and 8 in Figure 2). Client 7 presented with mild sinus congestion, but otherwise good health. The healer sensed heat in the neck and upper chest of the client, which was diminished by the end of the session but not completely gone. Two low-amplitude waves were observed during this session, one at 29 minutes on the right, and the other at 48 minutes on the left at session end (Figure 2). Client 8 presented with “no energy”, insomnia, chronic shoulder pain (right side) and hay fever. In the pre-energetic assessment, the healer found all the chakras open and the biofield “clear”. The healer did higher level HT interventions, such as Chelation, to raise energy and reduce pain in the shoulder. The MF activity was fairly quiet with a low-amplitude wave occurring on the right side shortly after the end of the session.

Figure 3. Healing Touch: Healers F, G, Location IN2

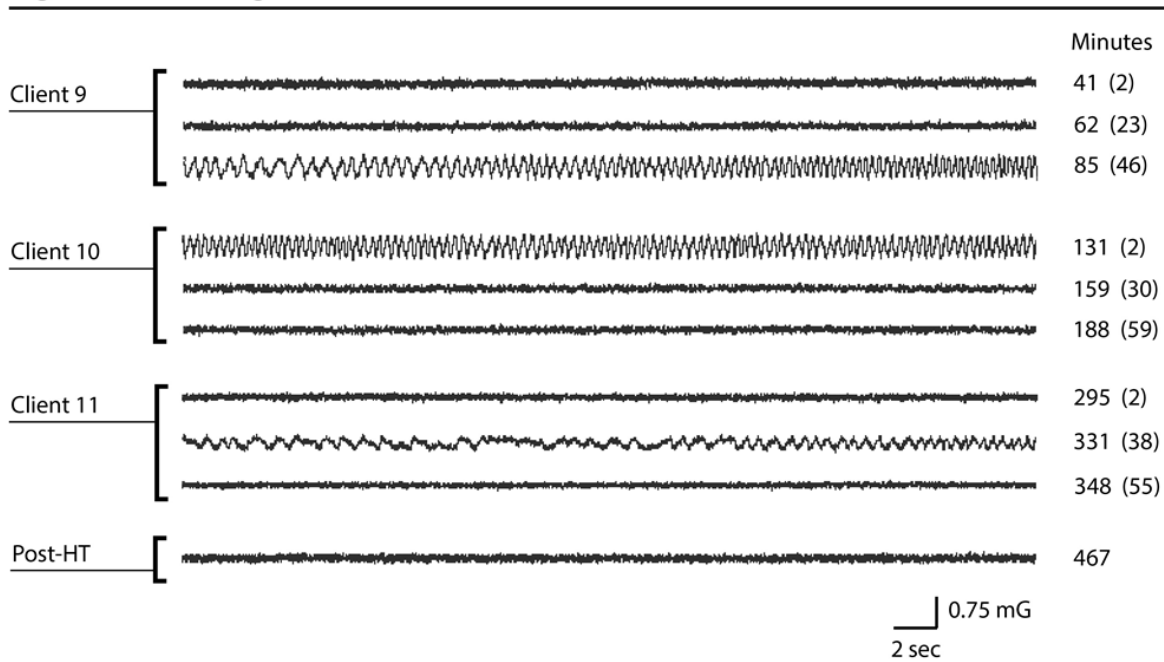


Fig. 3 Representative traces of MF activity during three HT sessions with Healers F and G, and Clients 9, 10 and 11, at location IN2, a healer’s home in Indianapolis, IN. All traces are MF activity on right side of client. “Minutes” indicates time within the day’s continuous MF recording, with time within the HT session indicated by parentheses. Note the low amplitude oscillations and relative quiet of the MF activity in these sessions.

Figure 3 illustrates MF activity on the right side during three HT sessions with two advanced HT student practitioners working together (Healers F and G). During the first session, Client 9, a breast cancer patient undergoing chemotherapy, presented with left hip pain and nausea. Both healers felt congestion in the biofield of this client, particularly along the right side of her head and neck. Healer G described this

congestion as a feeling of “cobwebs”. Two low-amplitude waves were observed during this session, one at 20min (right) and the other at 24min (left). At 34 min, $B_{\text{peak-peak}}$ began to increase on the right side, resulting in a higher-amplitude, more prolonged wave at the end of the session (85 minutes in Figure 3). MF oscillations from this session continued into the second session. Client 10, an ovarian cancer patient, presented with fatigue and skin complaints associated with chemotherapy. During this session, Healer G felt energy move up her own leg, but did not feel any energy flows in the client’s biofield. Similarly, Healer F felt less energy flow in this session as compared to the previous session. MF activity was very quiet during this 60-minute session. In the third session, Client 11, a breast cancer patient undergoing chemotherapy, presented with knee, eye and tooth pain. Healer F, “felt a lot of energy around her body”. Three low-amplitude MF waves were observed during this session at 15min (right), 39min (right) and 42min (left). Following this session, MF activity was recorded for an additional 2 hours (467 minutes in Figure 3). There were no MF waves during this post-HT period.

Figure 4. Healing Touch: Healer J, Location MN2

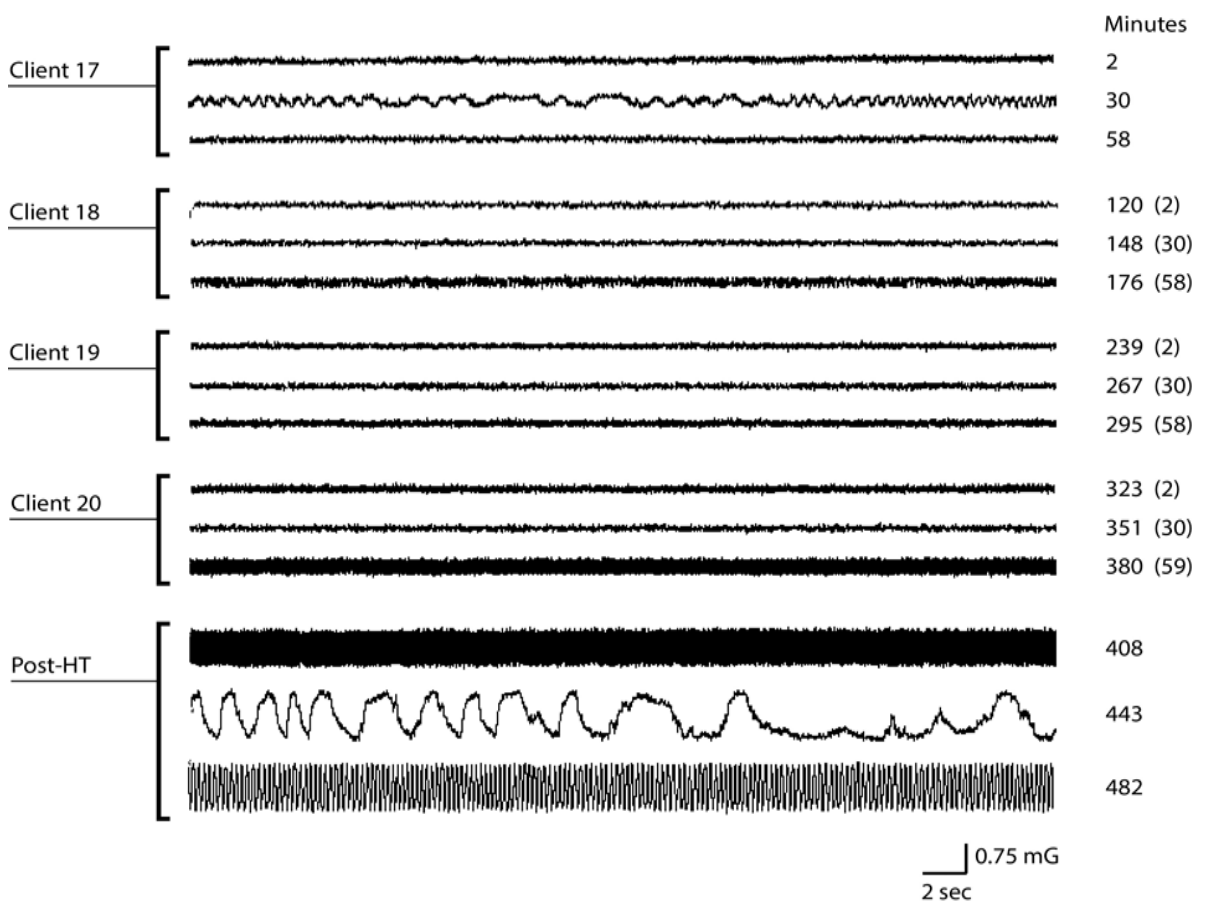


Fig. 4 Representative traces of MF activity during four HT sessions with Healer J, and Clients 17, 18, 19, and 20, at location MN2. All traces are MF activity on left side of client. “Minutes” indicates time within the day’s continuous MF recording, with time within the HT session indicated by parentheses. Note the MF wave at 30 minutes in the first session (Client 17) and the increase in $B_{\text{peak-peak}}$ at the end of the fourth session (Client 20), which continued for several hours afterwards.

Healer J, a Healing Touch instructor, gave Healing Touch to four different clients (Clients 17 – 20) in a specially designated healing room in his home in Minneapolis (Figure 4). The first client, Client 17, presented with rheumatoid arthritis and fatigue. During this session, the healer described “energy flow

through [the client's] body" at approximately 25 minutes into the session, followed by a "sacral release" at 35 minutes, and left hand spasm/tremors at 45 minutes. The MF record (Client 17 in Figure 4) showed a MF wave at 30 minutes on the left side of the client, followed by a return to baseline at the end of the session (58 minutes). On the right side of the client (not shown), a smaller amplitude MF wave was observed at 36 minutes. The client in the second session (Client 18) was in good health, except for a pulled muscle in his left calf. Healer J described a "calming release" during Mind Clearing in the first 10 minutes; then, the left calf "took lots of energy"; followed by a release and fill of the right hip during Chakra Connection with subsequent heart expansion and throat opening. The MF record (Client 18 in Figure 4) showed a largely quiet session with some minor MF oscillations at 18 minutes on the left side, followed by a slow increase in MF activity at 45 minutes that persisted to the end of the session (58 minutes). After this session was over, a MF wave appeared on the left side during lunch.

During the third session (Client 19 in Figure 4), MF activity was extremely quiet with no MF oscillations or waves. Client 19 had experienced Healing Touch many times, and was completing his training as a HT practitioner. Healer J felt a strong heart connection to the client, who was one of his students. He described the energy in this session as "expansive". The client in the fourth session (Client 20) had driven 1-1/2 hours to participate in the study. Her daughter was diagnosed with Hodgkin's disease after recently giving birth to her first child (the client's first grandchild). The client was taking care of both her daughter and granddaughter. During the session, Healer J sensed "heartbreak emotions" with her. He opened the session with the Spiral Meditation, holding and releasing her heart. During the Chakra Connection, "her hips had a lot of energy flow, as well as sacral [chakra], more release at heart". He continued, "near the end, as I was pulling energy from her heart area, she gasped and was jolted from her deep place. She couldn't describe the big release" that he felt. During the session, MF activity increased on the right side, with a large MF wave at 43 minutes (not shown). On the left side (Client 20 in Figure 4), there was a small MF wave at 19 minutes, with MF increasing towards the end of the session (59 minutes). After the "big release" in the heart area, MF activity increased dramatically, extending for several hours past the end of the session, with two large MF waves at 63 and 87 minutes after session-end (443 minutes in Figure 4).

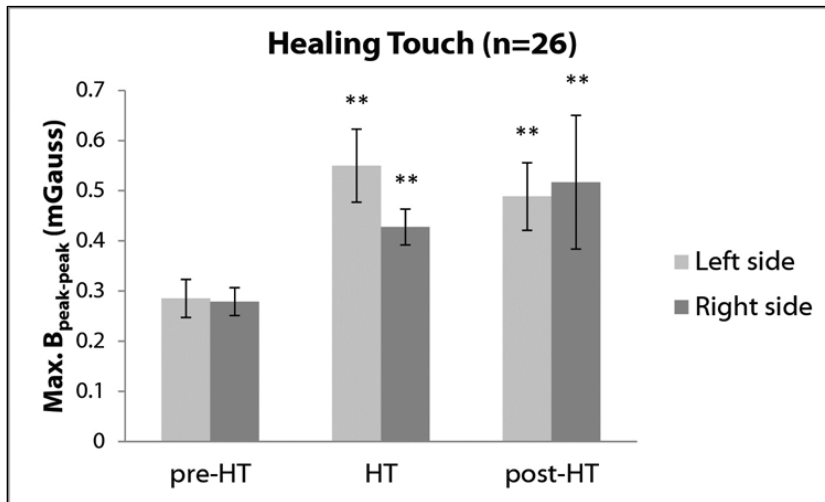


Fig. 5 Mean maximum amplitude, $B_{\text{peak-peak}}$, detected by gaussmeters on the right and left sides of the client during pre-HT, HT and post-HT time periods for the 26 HT experiments. Note the significant increase(**) in amplitude during the HT time period, which continued into the post-HT period, as compared to pre-HT.

The maximum amplitude of the MF oscillations ($B_{\text{peak-peak}}$) during each pre-HT, HT, and post-HT period was averaged for the 26 sessions and compared with the students t-test (Figure 5). MF oscillations were

significantly higher in amplitude during the HT session and post-session periods as compared to the pre-session period ($p < .001$). No change was observed between the HT and post-HT periods. In Figure 5, note that the variance for the Right side during post-HT was higher than the other categories. In this post-HT group, there was one outlier: the maximum $B_{\text{peak-peak}}$ was 3.8 milliGauss for client 24 who presented with childbirth trauma.

Figure 6. Qualitative analysis of Healing Touch sessions

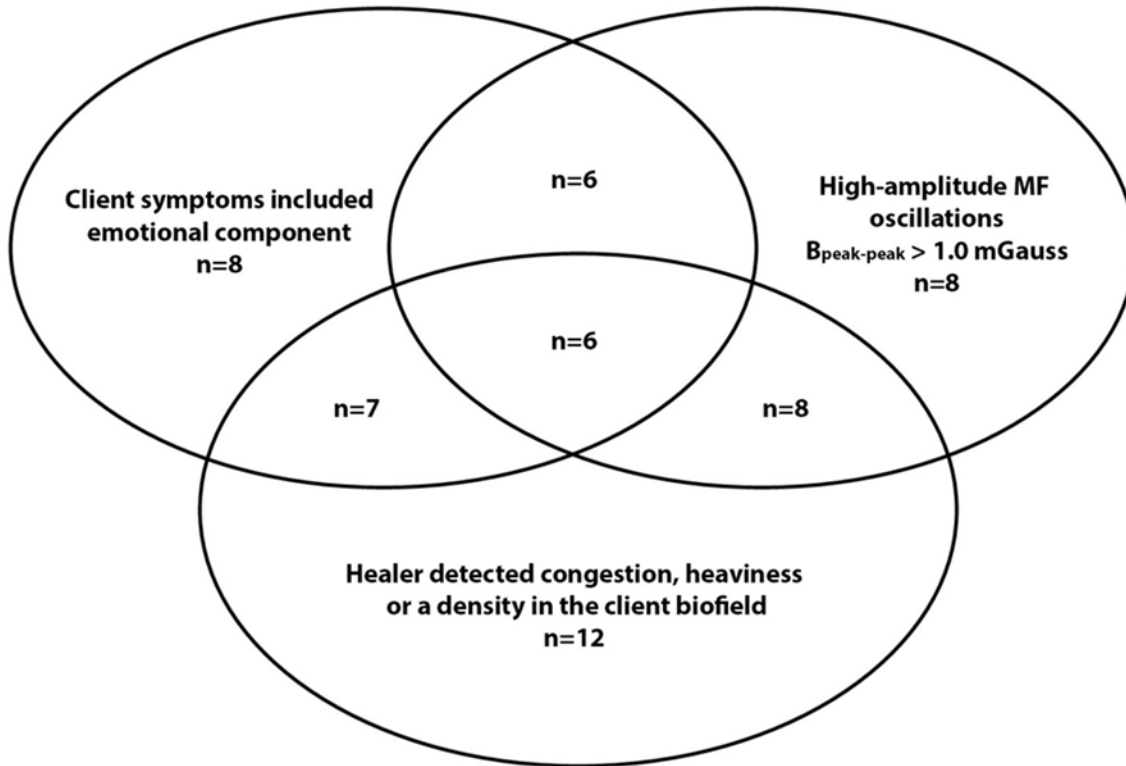


Fig. 6 Qualitative content analysis of HT sessions, indicating the number of sessions where, 1) the HT practitioner detected congestion or a density in the client's biofield, 2) the client presented with an emotional complaint, and/or 3) the maximum $B_{\text{peak-peak}}$ of the MF oscillations was > 1.0 milliGauss during or immediately after the HT session. Possible associations between these three factors are indicated in the overlap areas of the Venn diagram.

In a qualitative analysis of the HT experiments, a matrix was created comparing four elements: client symptoms; healer descriptions of the client's biofield; presence of MF waves; and maximum $B_{\text{peak-peak}}$. One set of possible associations was noted (Figure 6) between the client presenting with an emotional symptom, healer descriptions of congestion or a dense area in the biofield, and $B_{\text{peak-peak}} > 1.0$ mGauss. In 8 HT sessions, the client presented with an emotional complaint, with or without physical symptoms. The emotional complaints included stress, grief, anxiety, depression and trauma. In 12 HT sessions, the healer detected congestion, heaviness or a density in the biofield. In 3 of the 12 cases, the density was perceived as an object (e.g., "scab" or "screw"). Excluded from this category were healer perceptions of "prickly", "tingling", "heat" and "spikes". In 8 HT/post-HT periods, the MF oscillations were high-amplitude with maximum $B_{\text{peak-peak}}$ greater than 1.0 mGauss. The remaining 18 HT sessions displayed maximum $B_{\text{peak-peak}}$ values between 0.2 and 0.74 mGauss.

The highest values of $B_{\text{peak-peak}}$ were observed in experiments where the client presented with an emotional complaint ($n=6$) and/or the healer sensed a heaviness or congestion in the biofield ($n=8$). Congestion, heaviness or a density in the biofield was also commonly observed when the client presented

with an emotional complaint (n=7). Six cases displayed the combination of high-amplitude MF oscillations, congestion in the biofield and an emotional complaint. In 4 HT sessions, low-amplitude MF waves were associated with healer descriptions of “energetic releases” and client pain reduction. In two of these cases, the healers noted the side (right or left) and approximate time of the release, which seemed to correlate with the MF wave and the side it occurred on.

IIIb: Experiment 2: Magnetic field activity during Guided Progressive Relaxation

Healing Touch is often described by clients as “relaxing”. GPR has been used previously as a control for Healing Touch (Wardell et al., 2006). The question asked during this set of experiments: How does MF activity during GPR, with no healer present, compare to that observed during HT, with both healer and client?

Figure 7. Guided Progressive Relaxation: Location TH

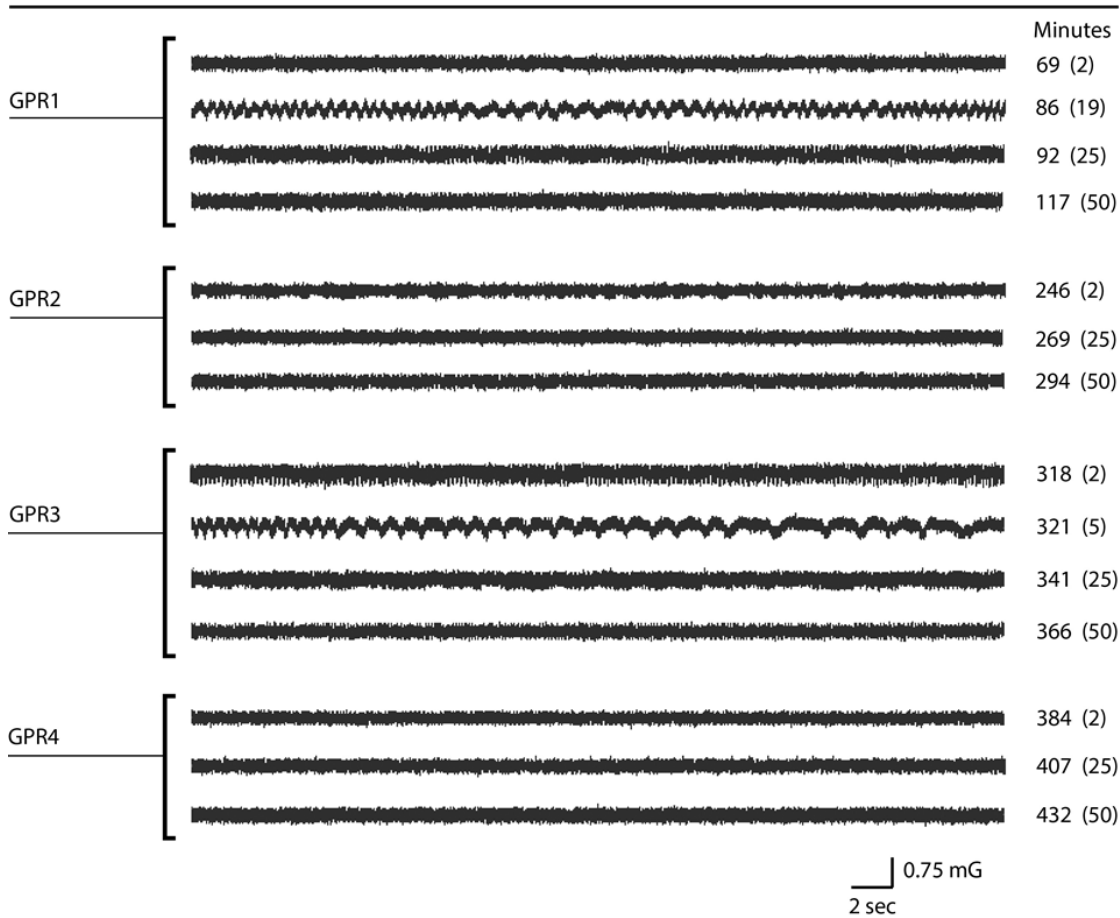


Fig. 7 Representative traces of MF activity during four GPR sessions with participants GPR1, 2, 3 and 4, at location TH. No healer was present during these sessions. All traces are MF activity on the right side of the client. “Minutes” indicates time within the day’s continuous MF recording, with time within the GPR session indicated by parentheses. Note the similar MF activity in each session in which the clients listened to the same CD.

Client participants in the GPR experiments (n=16) were predominantly female (87.5%), and were recruited from the same clinical populations as the HT participants. GPR sessions were 50 minutes in duration. MF activity during the GPR experiments displayed a higher, noisier baseline than the HT experiments. Representative MF activity during eight GPR sessions in two days is illustrated in Figures 7 and 8.

Low-amplitude MF waves were observed in 14 of 16 GPR sessions. In Figure 7, low-amplitude MF waves are visible at 86 and 321 minutes. Because each of the 16 participants listened to the same CD, the timing of the MF waves was compared across GPR sessions to look for any possible association with the verbalized content of the CD. In the GPR sessions, 55% of the MF waves occurred in the first 20 minutes of the session. Based on comments from the participants, the low-amplitude MF oscillations during the first 20 minutes may represent physical releases, as this part of the CD focused on releasing tension in individual muscle groups.

Figure 8. Guided Progressive Relaxation: Location TH

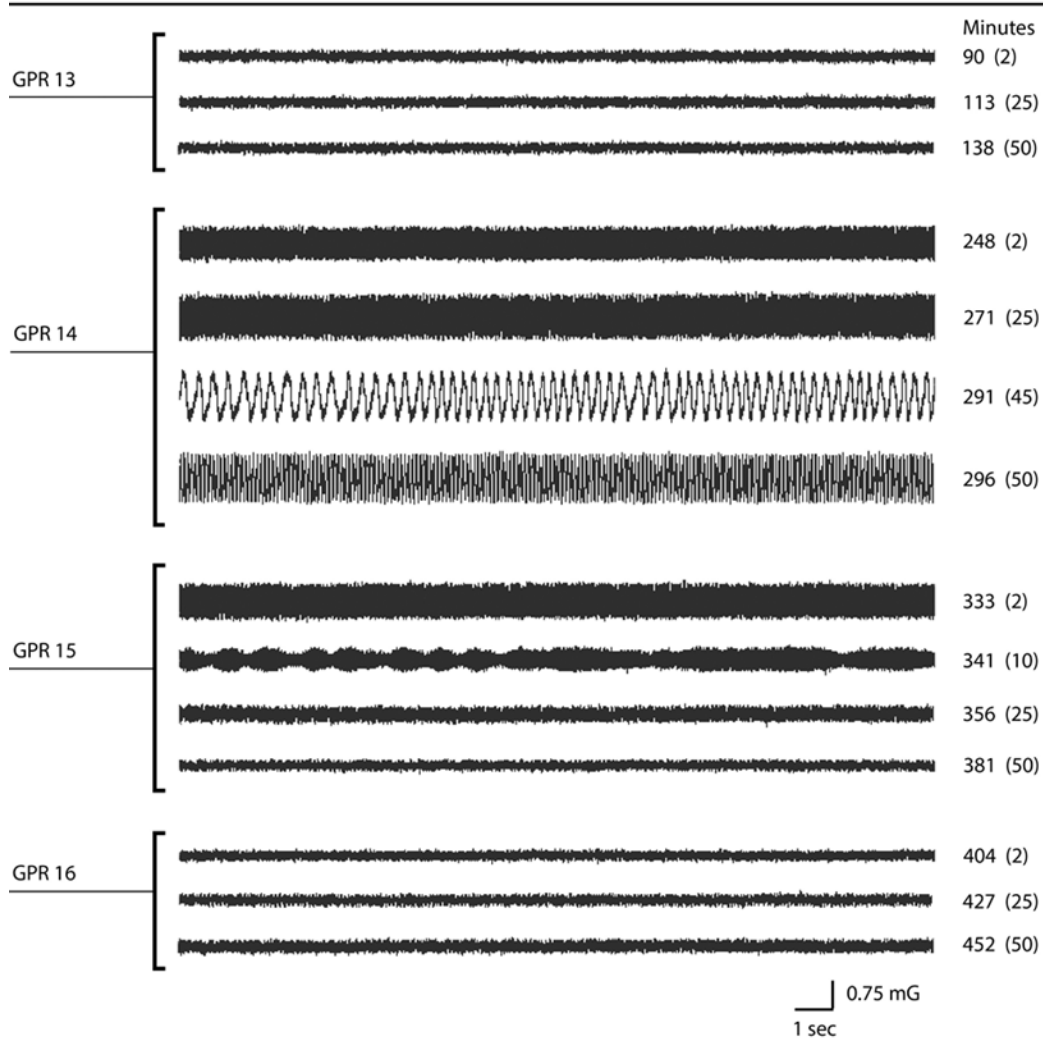


Fig. 8 Representative traces of MF activity during four GPR sessions with participants GPR13, 14, 15 and 16, at location TH. No healer was present during these sessions. All traces are MF activity on right side of client. “Minutes” indicates time within the day’s continuous MF recording, with time within the GPR session indicated by parentheses. Note the increase in $B_{\text{peak-peak}}$ during the second GPR session (GPR14) which continued into the third GPR session.

High-amplitude MF oscillations were observed in only one GPR session (GPR14 in Figure 8). The client in GPR14 revealed that she had been diagnosed with borderline personality disorder. Individuals with this disorder feel more intense emotions and emotional lability than the average person (Gunderson, 2011). High-amplitude MF oscillations from this session continued into GPR15 (Figure 8). The clients

in GPR13 and GPR16 were experienced meditators, which may have contributed to the slightly lower baseline (i.e., less noise) observed in the MF activity of these two sessions.

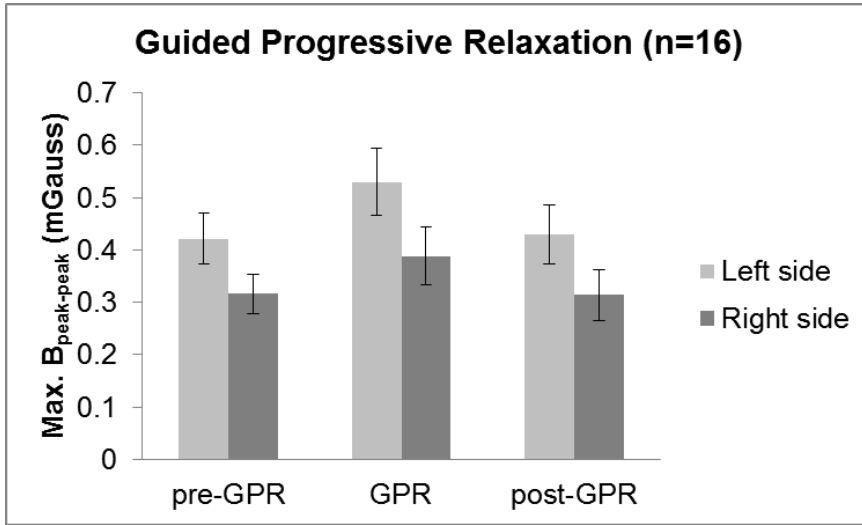


Fig. 9 Mean maximum amplitude, $B_{\text{peak-peak}}$, detected by gaussmeters on right and left sides of the client during pre-GPR, GPR and post-GPR time periods for the 16 GPR experiments. There was no significant change in mean maximum $B_{\text{peak-peak}}$ across the GPR time periods.

Unlike the HT experiments, there were no significant increases in mean maximum $B_{\text{peak-peak}}$ during or after the GPR sessions (Figure 9). Maximum $B_{\text{peak-peak}}$ was slightly greater on the left side of clients in the GPR experiments, as compared to the right side, but the reason for this difference is unknown.

IIIc: Experiment 3: Magnetic field activity during Mock Healing Touch

Movement of the HT practitioner around the massage table may influence MF activity, as some magnetometers are sensitive to physical vibrations in the immediate environment. Questions asked during this set of experiments: Does movement of the healer around the massage table affect the MF recording? Do the healer's emotions and health status affect MF activity?

Mock HT sessions ranged from 44 – 59 minutes in duration, with an average duration of 50 minutes. Because this type of control experiment has not been reported before, the first 10 experiments were done by the author in order to develop a protocol for practitioners to follow. In the first few mock HT sessions, I tried doing the HT interventions with no illness or client focus, just practicing the interventions above an empty massage table. With this protocol, I found that I proceeded too quickly through each intervention, so that the sessions were too short (i.e., less than 50 minutes). So I devised a method where I 'treated' an imaginary illness during the mock HT session, which slowed my steps, leading to the approximate length of a HT session. During the course of these initial 10 experiments, I observed that the MF activity in the room mirrored my emotions and physical health at the time of each session (Figure 10). For example, during the Mock HT1 session, I felt uncomfortable with no mental focus, waving my hands above an empty massage table. During Mock HT7, I felt physically ill, so the imaginary illness was my symptoms, which I 'treated'. The MF activity during this session included a low-amplitude MF wave (26 minutes in Mock HT7, Figure 10), which may represent the physical release I experienced. I felt distinctly better after this session. During Mock HT9, I was "heart-centered" and focused, with a feeling of warmth in my heart area. The Mock HT10 session immediately followed Mock HT9, but during this session I lost focus, thinking about what I would do later in the day, rather than the session itself. The MF activity in Mock HT9 and the first part of Mock HT10 was extremely quiet (Figure 10), resembling the baseline activity I observed with many of the HT sessions, where the HT practitioner began the session centering herself and setting an intent (i.e., focus) for the HT session.

Figure 10. Mock Healing Touch: Location TH

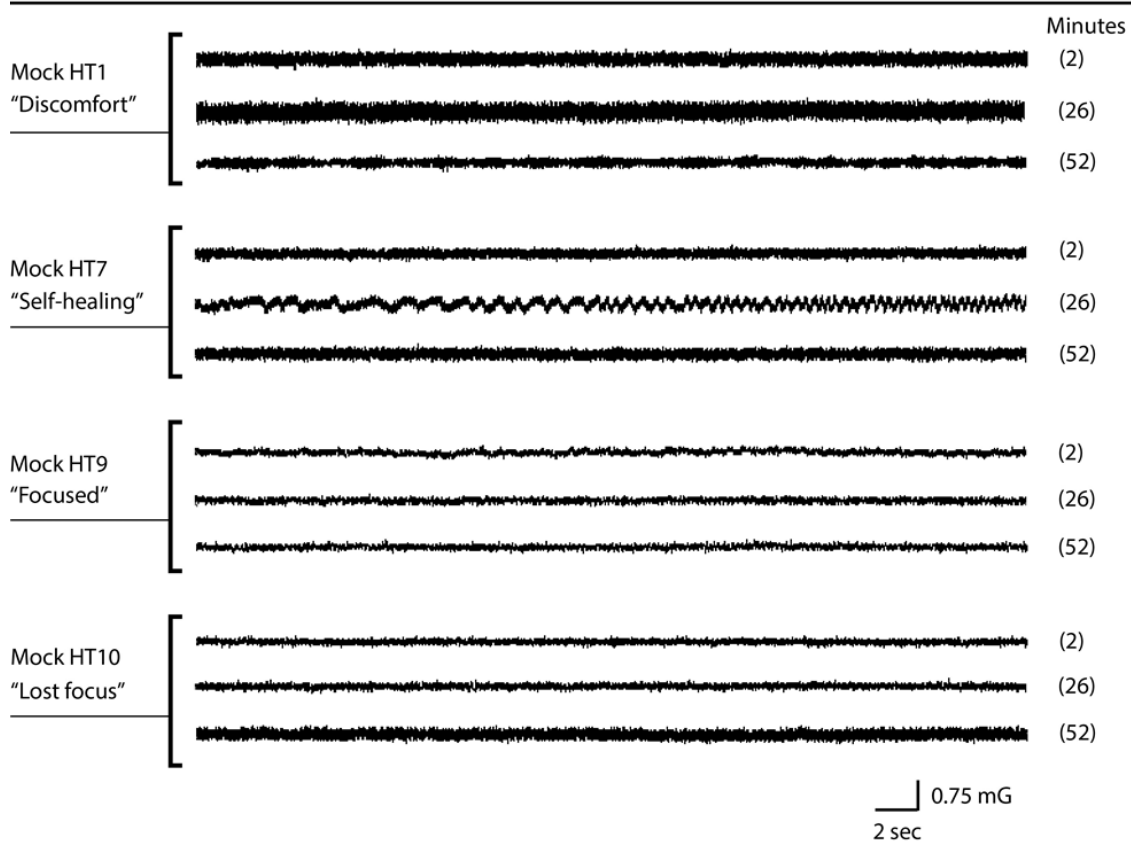


Fig. 10 Representative traces of MF activity during four Mock HT sessions by the author on three different days, at location TH. All traces are MF activity on right side of exam table. "Minutes" indicates time in parentheses within each Mock HT session. The author's experience during each Mock HT session is indicated in quotation marks.

The next 5 mock HT sessions were done by certified HT practitioners (Healers N – Q and S). In this set of 5 experiments, the HT practitioner did a mock HT session, treating an imaginary illness, followed by an actual HT session with a client. Figure 11 illustrates MF activity on the right side during 2 representative experiments, done on a single day, with two different healers and two different clients.

The MF activity during Mock HT13 with Healer P (a certified HT practitioner) was very quiet throughout the 45-minute session. During the HT session with Client 29, MF oscillations began about 20-minutes into the session, with a MF wave at the end of the session (192 minutes in Figure 9). The increased $B_{peak-peak}$ continued into the lunch break (Post-HT in Figure 9), finally quieting down during the Mock HT14 session with Healer Q, a Healing Touch instructor. During the HT session with Client 30, $B_{peak-peak}$ started increasing at the very beginning of the session during the assessment and intake process. The MF activity returned to baseline after the HT session. Overall, 4 out of the 5 mock HT sessions with the HT practitioners displayed very quiet MF activity with no MF oscillations. The one exception was Mock HT11, where a thunderstorm rolled through the area about 20-minutes into the session, with consequent noisiness in the MF recording (see below).

Figure 11. Mock HT followed by HT: Healers P, Q: Location TH

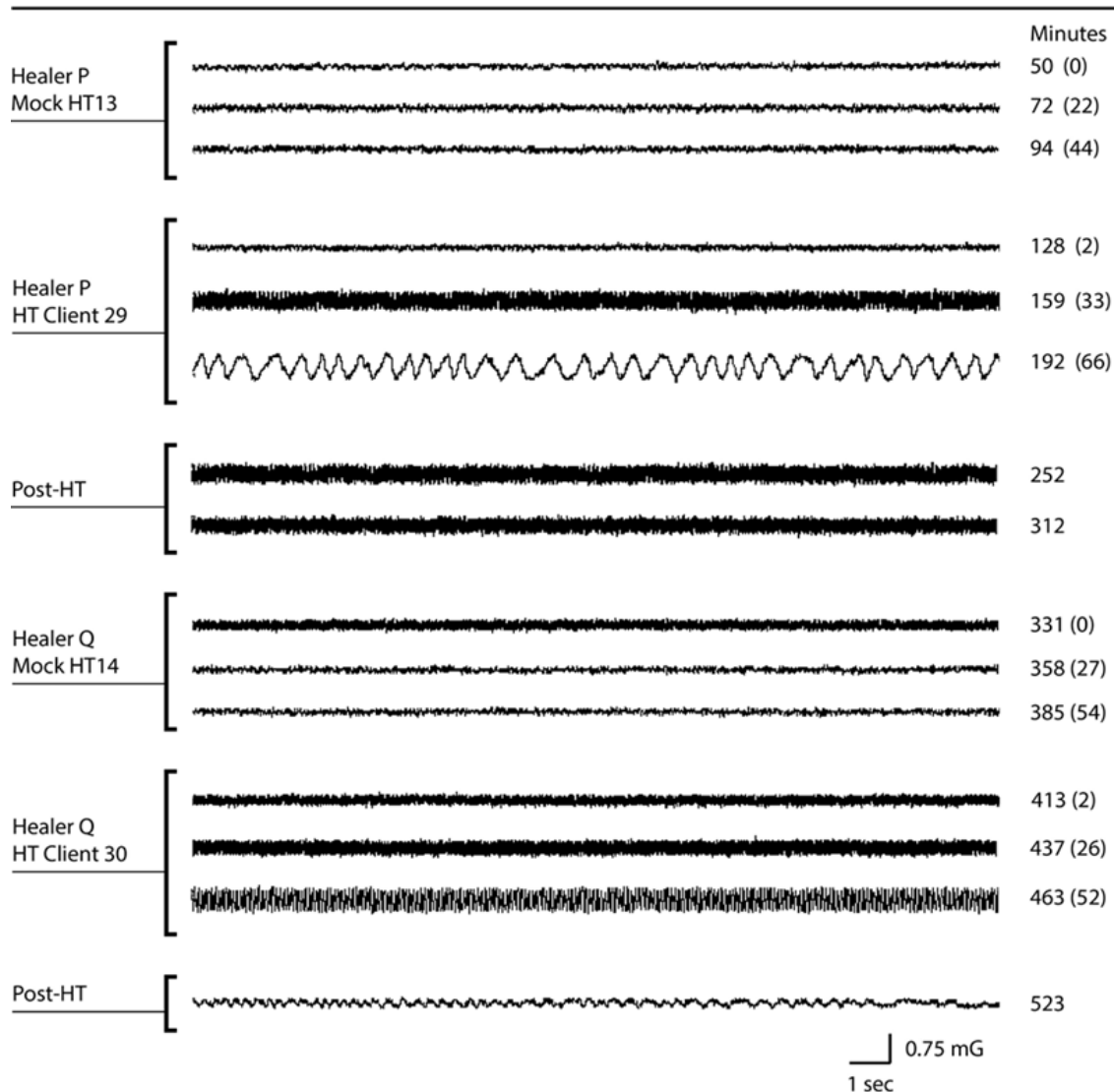


Fig. 11 Representative traces of MF activity during two Mock HT-HT sequences by Healers P and Q on a single day with Clients 29 and 30 at location TH. All traces are MF activity on the right side of the client. “Minutes” indicates time within the day’s continuous MF recording, with time within the Mock HT and HT sessions indicated by parentheses. Note the increase in $B_{\text{peak-peak}}$ during each HT session.

IIId: Additional experiments: Some possible sources of MF artifacts

Additional experiments were done to isolate some possible sources of artifact in the MF recordings (Figure 12). When the gaussmeters are switched on, sometimes there is a MF wave (“Artifact” in Figure 12), shorter in duration than the waves observed during the HT and GPR sessions. At other times, there is no MF wave or artifact (“No artifact” in Figure 12). After multiple trials, the common factors for production of this turn-on artifact appear to be: 1) looking intently at the gaussmeter while turning it on, and/or 2) high valence of emotion while turning it on. If I look away while turning on the gaussmeter, focusing on something else, and my emotions are quiet, then there is less likely to be an artifact. Electromagnetic fields produced by the eyes may contribute to the turn-on gaussmeter artifact. Ross (2010a, b) measured human ocular extramission about two centimeters in front of the eye using a high-impedance electrode, demonstrating an electromagnetic radiation from the eyes.

Figure 12. Some common artifacts with low-frequency MF recording

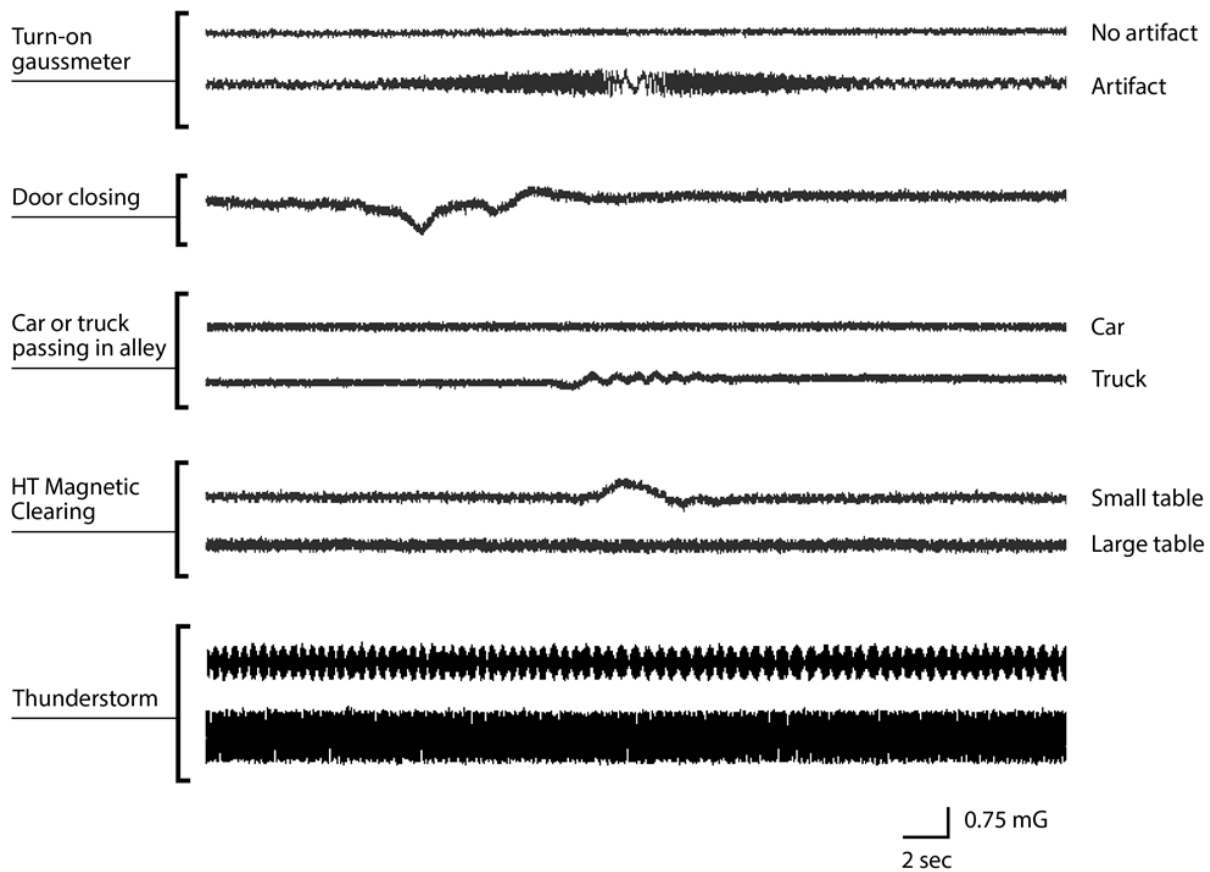


Fig. 12 Representative traces of common MF artifacts during the HT, GPR and Mock HT experiments.

Heavy movement in the vicinity of the gaussmeters can cause a movement artifact. Two examples of this type of artifact are a door closing in the clinic and a large utility truck passing by outdoors (Figure 12). Both of these artifacts are distinctly different from the MF oscillations observed during HT and GPR sessions. One concern is whether movement of the healer around the massage table can incur an artifact. During the HT intervention known as Magnetic Clearing, the practitioner repeatedly walks along the side of the client for a minimum of 15-minutes, clearing the biofield. If the gaussmeter is not well-supported, for example, if it is positioned on a small table, then a movement artifact is seen during this HT intervention each time the practitioner passes by the gaussmeter (“Small table in Figure 12). However, if the gaussmeter is positioned on a firm and stationary surface, such as a large table (“Large table” in Figure 12), then the movement artifact can be avoided.

Electrically-active thunderstorms are capable of producing MF oscillations (Figure 12), hence, the need to record MF activity on clear days rather than on days with inclement weather. Finally, geomagnetic storms are characterized by MF oscillations. The very low frequency of most geomagnetic oscillations (< 0.1Hz) causes an undulation or rolling in the MF baseline (not shown), distinguishing these oscillations from the higher frequencies observed in the present experiments.

IV: Discussion

Scientific studies of energy healing are few in number (for review, Benor, 2001) and funding for such studies is limited, so it is important to clarify the type of scientific inquiry needed to advance this field. A model developed by Platt (1964) and used successfully in molecular biology and high-energy physics is “strong-inference”. In this model, a scientifically interesting observation is identified. All possible hypotheses that account for the observation are tested by experiment, and the remaining hypothesis, which was not rejected by experiment, is held as the cause for the observation. Jewett (2005) noted that “strong-inference” is not useful in scientific fields where observations are few or methods nonexistent (e.g., energy healing). In such newly emerging fields, he proposes the use of “strong-inference-plus”, which consists of exploratory, pilot, and hypotheses-testing phases. In particular, he states that, “during the exploratory phase the factors that influence success are unclear, so the research must proceed by way of hunches, serendipitous observations, and selections based on inadequate information”.

Based on Jewett’s descriptions, the present study is “exploratory” with some “pilot” data generated. At the beginning of this study, it was uncertain that magnetic field oscillations would be detectable in the unshielded environment. It was a surprise to discover that the oscillations were similar across study sites and in sessions with different practitioners. The usefulness of this method for the study of energy healing was/is unknown. The observations generated in the present study provide a basis for future experiments designed to test alternative hypotheses regarding psychic/energy healing and low-frequency MF oscillations.

While preliminary, the results of the HT experiments show a general trend towards an increase in low-frequency MF amplitude/oscillations during and immediately following the HT session (Figure 5). In some HT sessions, the MF activity was relatively “quiet”, with only a small number of low-amplitude oscillations, while other sessions showed sustained high-amplitude MF oscillations. The MF oscillations with the greatest amplitude ($B_{\text{peak-peak}} > 1.0$ milliGauss) were observed in HT sessions where the practitioner cleared congestion or removed a density from the biofield, and/or the client presented with an emotional complaint (Figure 9). The HT interventions most often used by the healers for “clearing the energy field of congested energy” were Magnetic Clearing, Chelation, Deep Cleansing and Hands-in-Motion. These same interventions have been found to be helpful in releasing emotions such as fear, anger, worry and tension (Hover-Kramer, 2009). For example, Magnetic Clearing was used to clear the heaviness in the biofields of Clients 1 and 14 who presented with symptoms of, respectively, grief and anxiety. Deep Cleansing was used to remove the congestion associated with heartbreak in Client 20 (Figure 4), and to remove the sexual trauma-associated object embedded in the biofield of Client 24. In each of these four cases, high-amplitude MF oscillations were observed.

Congestion in the biofield may represent “stored, blocked patterns”, such as persistent thoughts/emotions or emotional trauma (Brennan, 1988; Hover-Kramer and Shames, 1997). Hover-Kramer and Shames (1997) recommend combining HT energetic techniques, such as Hands-in-Motion, with conventional psychotherapy to facilitate “emotional clearing”. According to Valerie Hunt (1996), the biofield is “organized by emotion, where emotion is an agitation, a disturbance in the quality of flow of energy occurring as a result of field transaction”. She further notes the importance of emotional release in reorganizing the “mind-field”, which can lead to a reordering and healing of the physical body. Similarly, Redpath (1994) describes “held-energy patterns” in the biofield, which in his experience, are stored energetically in the mind-body following trauma. In addition, he has noted how these “held-energy patterns” can be perceived as objects in the mind-body, each with its own shape, texture and color. Interestingly, one of the healers in our study, Healer K, described densities in her client’s biofields as objects with specific shapes and colors. For example, Client 20 had a “black scab”, and Client 24, a “screw”, in their respective biofields. In shamanic healing, objects in the energetic body are called ‘intrusions’. Intrusions originate from persistent harmful emotions or thoughts. Intrusions can cause

illness and are removed from the patient's body by the shaman (Harner, 1996). Given the similarity between some HT practitioners and shamanic healers, magnetic field recording may also be useful in the study of shamanic healing.

In 14 of 26 HT sessions, $B_{\text{peak-peak}}$ was elevated at the end of the HT session, with the result that MF oscillations from one session continued into the next session. A similar phenomenon, where the environment remains changed for a period of time following an intervention, has been described in the parapsychological literature as the "linger effect". The "linger effect" has been observed in energy healing experiments with mice and in macro-psychokinesis (PK) experiments with human subjects. In the healing experiments, mice that were anesthetized with ether woke significantly faster with a healer (Wells and Watkins, 1974). Control mice placed on the same side of the table where the healer had worked would continue to wake faster for some period of time after the healer had left. This "linger effect" required more than a half-hour to extinguish and lost potency over distance. As another example of the "linger effect", subject Felicia Parise in macro-PK experiments mentally moved a compass needle several degrees off North, and after she left the experimental setting, the needle remained several degrees off North, gradually returning to North after about thirty minutes (Heath, 2003). In the HT experiments, the MF oscillations required some time to dissipate, from 30-minutes to several hours, depending on the amplitude of the oscillations. Continuous MF recording may be a way to measure the "linger effect" observed in parapsychology experiments.

Given the low-frequencies of the MF oscillations observed during the HT experiments, there is the potential that physiological effects may occur while the client resides within these fields. Ultra-Low (ULF) and extreme-low (ELF) frequencies predominate in the human body, for example, 0.01 – 0.1Hz in smooth muscle peristalsis and 2 – 10Hz in the sympathetic nerves to the heart and kidneys (Basar, 2008). Pulsed electromagnetic fields based on physiological frequencies are used therapeutically in bone repair, and for arthritic pain and wound healing (Markov, 2007). The low-frequency MF wave detected in the present experiments could be replicated with an electromagnetic coil and signal generator, and tested on an animal model or *in vitro* cell preparation, which would help to determine whether these waves are of any physiological significance.

As a comparison to the HT experiments, I recorded MF activity during experiments with GPR and mock HT. HT is associated with both physiological and psychological relaxation (Maville et al., 2008), and GPR has been used previously as a control for Healing Touch (Wardell et al., 2006). Overall, the GPR sessions differed from the HT sessions in that they did not show any sustained increases in $B_{\text{peak-peak}}$ (with one exception), and they displayed a higher, noisier baseline activity. Small-amplitude MF waves were scattered throughout the GPR sessions, with a concentration in the first 20 minutes of the session. Feedback from the participants suggests that the MF waves in the first 20 minutes may be associated with the participants' releasing tension in various muscle groups and becoming physically relaxed. Progressive relaxation techniques involve focusing on the tension in individual muscle groups, or actually tensing the muscle groups, followed by a release of the tension, in a progression through the body, typically starting with the jaw and facial muscles. I speculate that this process, tensing and releasing, could lead to "energetic releases" similar to those observed in Healing Touch and other bioenergetic practices (Moga and Geib, 2009).

In the HT experiments, the HT practitioners would ask for some quiet time in the room before a HT session, where they would "center" themselves and/or "clear the space". This healer intent was absent during the GPR experiments, and it may have been responsible for the noisier baseline MF activity observed during the GPR sessions. The quieting of baseline MF activity was particularly evident during the mock HT experiments with HT practitioners (e.g., Healer Q in Figure 11). During my own experiments with mock HT, I was struck by how quiet the MF activity became when I entered a "heart-centered" state with a noticeable feeling of warmth in my heart area (Mock HT9 in Figure 10). MF

activity during mock HT may be a measure of a healer's ability to center, focus and quiet his/her emotions.

Viewed as a whole, these experiments suggest that human emotions may extend outward and be detectable as low-frequency MF oscillations. Evidence for this possibility includes: 1) the high-amplitude MF oscillations in HT cases with an emotional complaint; 2) the high-amplitude MF oscillations observed with the borderline personality patient in the GPR experiments; and 3) the variation in MF activity during mock HT associated with my emotions. In popular culture, we talk about "good vibes, bad vibes" in connection with people and places. These perceptions of "vibes" or vibrations may be based, in part, on differences in environmental MF activity present in the room or near to a particular individual. An emotion-MF activity hypothesis could be tested with actors/healers/ordinary individuals displaying various emotions in blinded, controlled experiments with continuous MF recording.

An active area of parapsychological research is the study of electromagnetic/geomagnetic field activity associated with paranormal phenomena. Similar to the method used in the present study, investigators are using continuous MF recording in their studies of hauntings and haunted places (e.g., Braithwaite, 2006; Laythe and Owen, 2014). For example, Laythe and Owen (2013) found that serial spikes in electromagnetic and geomagnetic field activity in a haunted house without electricity were associated with video- and audio-recorded anomalous events. Wiseman et al. (2002) observed that unusual experiences in a haunted house were associated with high levels of geomagnetic field activity and gradients in field strength. With two magnetometers in different parts of one room, Braithwaite (2004) demonstrated that geomagnetic field variability and magnitude significantly varied between the haunted area as compared to the non-haunted area within the same room. Electromagnetic theories of psi (Irwin and Watt, 2007; Schoch and Yonaviak, 2008) are further supported by studies demonstrating, 1) improved ESP performance with a quiet geomagnetic field (Radin, 1997) or with geomagnetic pulsations in the 0.2-0.5 Hz band (Ryan, 2008); 2) alteration of magnetometer output during remote viewing (Puthoff and Targ, 1974), and 3) haunt and anomalous experiences evoked by complex magnetic fields applied to the cranium (Persinger et al., 2000). The magnetic fields implicated in haunting experiences are temporally complex, weak-intensity and extra-low frequency (0.1 to 30Hz) (Braithwaite, 2010), which is a good description of the MF detected in the present study.

Healing Touch practitioners often report unusual experiences during energy healing, such as sensing the presence of spirit guides and/or 'seeing' objects in the biofield. Some investigators have suggested that all psychic and spiritual experiences may be reducible to neural activity in the limbic system and related brain structures, a so-called neurotheological approach to reality (Persinger, 1983; d'Aquili and Newberg, 1999). Weak, complex MF applied to the cranium can evoke psychic and religious experiences (Roll et al., 2002). Persinger (1983) has proposed that anomalous experiences are due to micro-seizures in the temporal lobe of the brain – what he calls "temporal lobe transients". The nervous system is extremely sensitive to low-frequency MF (Cook et al, 2005; Robertson et al., 2010), like that used by Persinger and colleagues. Stochastic resonance has been proposed as a possible mechanism coupling weak, complex MF with neural activity (Braithwaite, 2010). My results show that weak, complex MF activity is produced during psychic/energy healing. The MF produced during HT could alter the neural activity of practitioners and clients, leading to anomalous experiences.

Many researchers have noted that psychic/energy healing and other paranormal phenomena cannot be explained solely by classical electromagnetic fields (e.g., Heath, 2003; Irwin and Watt, 2007; Schwartz and Simon, 2007; Schoch and Yonavjak, 2008). Instead, a combination of classical electromagnetic (EM) fields, non-classical EM fields and quantum fields are probably involved in bioenergetics and paranormal phenomena. The physics literature contains examples of non-classical EM fields, including "magnetic vector potentials", "non-Hertzian fields", "longitudinal or scalar waves", which can arise and/or interact with classical EM fields (Rein, 2001). Non-classical EM fields can be produced with non-inductive, self-

canceling coils or toroidal coils; these fields have been shown to have strong biological effects (Rein, 2001). The MF waves in the present experiments may be what Sidorov (2002) has described as “electromagnetic signatures” – indicators of a process involving non-classical EM and quantum fields. Future experiments will try to determine the significance of these “electromagnetic signatures” and their role in directed intent and paranormal phenomena.

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