A Close Look at Therapeutic Touch

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Context.—Therapeutic Touch (TT) is a widely used nursing practice rooted in mysticism but alleged to have a scientific basis. Practitioners of TT claim to treat many medical conditions by using their hands to manipulate a "human energy field" perceptible above the patient's skin.

Objective.—To investigate whether TT practitioners can actually perceive a "human energy field."

Design.—Twenty-one practitioners with TT experience from 1 to 27 years were tested under blinded conditions to determine whether they could correctly identify which of their hands was closest to the investigator's hand. Placement of the investigator's hand was determined by flipping a coin. Fourteen practitioners were tested 10 times each, and 7 practitioners were tested 20 times each.

Main Outcome Measure.—Practitioners of TT were asked to state whether the investigator's unseen hand hovered above their right hand or their left hand. To show the validity of TT theory, the practitioners should have been able to locate the investigator's hand 100% of the time. A score of 50% would be expected through chance alone.

Results.—Practitioners of TT identified the correct hand in only 123 (44%) of 280 trials, which is close to what would be expected for random chance. There was no significant correlation between the practitioner's score and length of experience (r=0.23). The statistical power of this experiment was sufficient to conclude that if TT practitioners could reliably detect a human energy field, the study would have demonstrated this.

Conclusions.—Twenty-one experienced TT practitioners were unable to detect the investigator's "energy field." Their failure to substantiate TT's most fundamental claim is unrefuted evidence that the claims of TT are groundless and that further professional use is unjustified.

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THERAPEUTIC TOUCH (TT) is a widely used nursing practice rooted in mysticism but alleged to have a scientific basis. Its practitioners claim to heal or improve many medical problems by manual manipulation of a "human energy field" (HEF) perceptible above the patient's skin. They also claim to detect illnesses and stimulate recuperative powers through their intention to heal. Therapeutic Touch practice guides[1-6] describe 3 basic steps, none of which actually requires touching the patient's body. The first step is centering, in which the practitioner focuses on his or her intent to help the patient. This step resembles meditation and is claimed to benefit the practitioner as well. The second step is assessment, in which the practitioner's hands, from a distance of 5 to 10 cm, sweep over the patient's body from head to feet, "attuning" to the patient's condition by becoming aware of "changes in sensory cues" in the hands. The third step is intervention, in which the practitioner's hands "repattern" the patient's "energy field" by removing "congestion," replenishing depleted areas, and smoothing out ill-flowing areas. The resultant "energy balance" purportedly stems disease and allows the patient's body to heal itself.[7]

Proponents of TT state that they have "seen it work."[8] In a 1995 interview, TT's founder said, "In theory, there should be no limitation on what healing can be accomplished."[9] Table 1 lists some claims made for TT in published reports.

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Ms E. Rosa designed and conducted the tests and tabulated her findings. Mr Sarner did the statistical analysis. He and Ms L. Rosa recruited the test subjects, performed the literature analysis, and drafted this report. Dr Barrett added background material and edited the report for publication.

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BACKGROUND

Professional Recognition

Proponents state that more than 100 000 people worldwide have been trained in TT technique,[38] including at least 43 000 health care professionals,[2] and that about half of those trained actually practice it.[39] Therapeutic Touch is taught in more than 100 colleges and universities in 75 countries.[5] It is said to be the most recognized technique used by practitioners of holistic nursing.[40] Considered a nursing intervention, it is used by nurses in at least 80 hospitals in North America,[33] often without the permission or even knowledge of attending physicians.[41-43] The policies and procedures books of some institutions recognize TT,[44] and it is the only treatment for the "energy-field disturbance" diagnosis recognized by the North American Nursing Diagnosis Association.[45] *RN*, one of the nursing profession's largest periodicals, has published many articles favorable to TT.[46-52]

Many professional nursing organizations promote TT. In 1987, the 50 000-member Order of Nurses of Quebec endorsed TT as a "bona fide" nursing skill.[32] The National League for Nursing, the credentialing agency for nursing schools in the United States, denies having an official stand on TT but has promoted it through books and videotapes,[3,53,54] and the league's executive director and a recent president are prominent advocates.[55] The American Nurses' Association holds TT workshops at its national conventions. Its official journal published the premier articles on TT[56-59] as well as a recent article designated for continuing education credits.[60] The association's immediate past president has written editorials defending TT against criticism.[61] The American Holistic Nursing Association offers certification in "healing touch," a TT variant.[62] The Nurse Healers and Professional Associates Cooperative, which was formed to promote TT, claims about 1200 members.[39]

The TT Hypothesis

Therapeutic Touch was conceived in the early 1970s by Dolores Krieger, PhD, RN, a faculty member at New York University's Division of Nursing. Although often presented as a scientific adaptation of "laying-on of hands,"[63-68] TT is imbued with metaphysical ideas.

Krieger initially identified TT's active agent as *prana*, an ayurvedic, or traditional Indian, concept of "life force." She stated,

> Health is considered a harmonious relationship between the individual and his total environment. There is postulated a continuing in-

Table 1.—Claims Made for Therapeutic Touch

Calms colicky infants,[9] hospitalized infants,[10] women in childbirth,[11] trauma patients,[12] and hospitalized cardiovascular patients[13,14]
Promotes bonding between parents and infants[15]
Increases milk let down in breast-feeding mothers[16]
Helps children make sense of the world[17]
Protects nurses from burnout[18] and effects changes in their lifestyle[19]
Helps to evaluate situations where diagnosis is elusive[9]
Relieves acute pain,[20] especially from burns[21]
Relieves nausea,[22,23] diarrhea,[5] tension headaches,[24] migraine headaches,[21] and swelling in edematous legs and arthritic joints[7]
Decreases inflammation[25]
Breaks fever[21]
Remedies thyroid imbalances[5]
Helps skin grafts to seed[9]
Promotes healing of decubitus ulcers[7]
Alleviates psychosomatic illnesses[5]
Increases the rate of healing for wounds, bone and muscle injuries, and infections[26]
Relieves symptoms of Alzheimer disease,[27] acquired immunodeficiency syndrome,[5] menstruation,[28] and premenstrual syndrome[21]
Is an innovative means of social communication[29]
Is effective with the aged,[30,31] asthmatic or autistic children, stroke patients, and coma patients[9]
Supports people with multiple sclerosis and Raynaud disease[32]
Treats measles[33] and many different forms of cancer[34]
Comforts the dying[35-37]
Helps to bring some dead back to life[2]

teracting flow of energies from within the individual outward, and from the environment to the various levels of the individual. Healing, it is said, helps to restore this equilibrium in the ill person. Disease, within this context, is considered an indication of a disturbance in the free flow of the pranic current.[68]

Krieger further postulated that this "pranic current" can be controlled by the will of the healer.

> When an individual who is healthy touches an ill person with the intent of helping or healing him, he acts as a transference agent for the flow of prana from himself to the ill person. It was this added input of prana . . . that helped the ill person to overcome his illness or to feel better, more vital.[68]

Others associate all this with the Chinese notion of *qi*, a "life energy" alleged to flow through the human body through invisible "meridians." Those inspired by mystical healers of India describe this energy as flowing in and out of sites of the body that they call *chakras*.

Soon after its conception, TT became linked with the westernized notions of the late Martha Rogers, dean of nursing at New York University. She asserted that humans do not merely possess energy fields but *are* energy fields and constantly interact with the "environmental field" around them. Rogers dubbed her approach the "Science of Unitary Man,"[69] which later became known as the more neutral "Science of Unitary Human Beings." Her nomenclature stimulated the pursuit of TT as a "scientific" practice. Almost all TT discussion today is based on Rogers' concepts, although Eastern metaphysical terms such as *chakra*[2,70] and *yin-yang*[71] are still used.

The HEF postulated by TT theorists resembles the "magnetic fluid" or "animal magnetism" postulated during the 18th century by Anton Mesmer and his followers. Mesmerism held that illnesses are caused by obstacles to the free flow of this fluid and that skilled healers ("sensitives") could remove these obstacles by making passes with their hands. Some aspects of mesmerism were revived in the 19th century by Theosophy, an occult religion that incorporated Eastern metaphysical concepts and underlies many current New Age ideas.[72] Dora Kunz, who is considered TT's codeveloper, was president of the Theosophical Society of America from 1975 to 1987. She collaborated with Krieger on the early TT studies and claims to be a fifth-generation "sensitive" and a "gifted healer."[20]

Therapeutic Touch is set apart from many other alternative healing modalities, as well as from scientific medicine, by its emphasis on the healer's intention. Whereas the testing of most therapies requires controlling for the placebo effect (often influenced by the recipient's belief about efficacy), TT theorists suggest that the placebo effect is irrelevant. According to Krieger,

> Faith on the part of the subject does not make a significant difference in the healing effect. Rather, the role of faith seems to be psychological, affecting his acceptance of his illness or consequent recovery and what this means to him. The healer, on the other hand, must have some belief system that underlies his actions, if one is to attribute rationality to his behavior.[65]

Thus, the TT hypothesis and the entire practice of TT rest on the idea that the patient's energy field can be detected and intentionally manipulated by the therapist. With this in mind, early practitioners concluded that physical contact might not be necessary.[13] The thesis that the HEF extends beyond the skin and can be influenced from several centimeters away from the body's surface is said to have been tested by Janet Quinn, PhD, and reported in her 1982 dissertation.[14] However, that study merely showed no difference between groups of patients who did or did not have actual contact during TT. Although Quinn's work has never been substantiated, nearly all TT practitioners today use only the noncontact form of TT.

As originally developed by Krieger, TT did involve touch, although clothes and other materials interposed between practitioner and patient were not considered significant.[56] It was named TT because the aboriginal term *laying-on of hands* was considered an obstacle to acceptance by "curriculum committees and other institutional bulwarks of today's society."[66] The mysticism has been downplayed, and various scientific-sounding mechanisms have been proposed. These include the therapeutic value of skin-to-skin contact, electron transfer resonance, oxygen uptake by hemoglobin, stereochemical similarities of hemoglobin and chlorophyll, electrostatic potentials influenced by healer brain activity, and unspecified concepts from quantum theory.[66,67]

Therapeutic Touch is said to be in the vanguard of treatments that allow "healing" to take place, as opposed to the "curing" pejoratively ascribed to mainstream medical practice. Therapeutic Touch supposedly requires little training beyond refining an innate ability to focus one's intent to heal; the patient's body then does the rest.[5] Nurses who claim a unique professional emphasis on caring are said to be specially situated to help patients by using TT.[56,59] Nonetheless, proponents also state that nearly everyone has an innate ability to learn TT, even small children and juvenile delinquents on parole.[2,17,32]

Proponents describe the HEF as real and perceptible. Reporting on a pilot study, Krieger claimed that 4 blindfolded men with transected spinal cords "could tell exactly where the nurse's hands were in their HEFs during the Therapeutic Touch interaction."[5] In ordinary TT sessions, practitioners go through motions that supposedly interact with the patient's energy field, including flicking "excess energy" from their fingertips.[3]

Therapeutic Touch is claimed to have only beneficial effects.[39] However, some proponents warn against overly lengthy sessions or overtreating certain areas of the body. This caution is based on the notion that too much energy can be imparted to a patient, especially an infant, which could lead to hyperactivity.[5,73,74]

Literature Analysis

Although TT proponents refer to a voluminous and growing body of valid research,[63,75,76] few studies have been well designed. Some clinical studies, mostly nursing doctoral dissertations, have reported positive results, principally with headache relief, relaxation, and wound healing.* However, the methods, credibility, and significance of these studies have been seriously questioned.[41,87-95] One prominent proponent questions the validity of the typical placebo control used in these studies.[96]

Two of the authors (L.R. and L.S.) have conducted extensive literature searches covering the years 1972 through 1996.

*References 5, 13, 14, 23, 24, 26, 28, 30, 68, 77-86

Using key words such as *therapeutic touch*, *touch therapies*, *human energy field*, *quackery*, and *alternative medicine*, we have searched MEDLINE, *Index Medicus*, CINAHL, *Dissertation Abstracts*, *Masters Abstracts*, *Science Citation Index*, *Government Publications Index*, *Books in Print*, *National Union Catalog*, *Reader's Guide to Periodical Literature*, and *Alternative Press Index*. We attempted to obtain a full copy of each publication and every additional publication cited in the ones we subsequently collected. During 1997, we continued to monitor the journals most likely to contain material about TT.

These methods have enabled us to identify and obtain 853 reports (or abstracts), of which 609 deal specifically with TT, 224 mention it incidentally, and 20 discuss TT predecessors. Ninety-seven other cited items were either nonpublished or were published in obscure media we could not locate. Only 83 of the 853 reports described clinical research or other investigations by their authors. Nine of these studies were not quantitative. At most, only 1 (the study by Quinn[14]) of the 83 may have demonstrated independent confirmation of any positive study.[97] (That study was conducted by a close associate of the original researcher.) To our knowledge, no reported study attempted to test whether a TT practitioner could actually detect an HEF.

Of the 74 quantitative studies, 23 were clearly unsupportive. Eight reported no statistically significant results,[16,58,98-103] 3 admitted to having inadequate samples,[22,56,104] 2 were inconclusive,[11,105] and 6 had negative findings.[106-111] Four attempted independent replications but failed to support the original findings.[112-115] To our knowledge, no attempt to conduct experiments to reconcile any of these unsupportive findings has been reported.

In 1994, the University of Colorado Health Sciences Center (UCHSC), Denver, empaneled a scientific jury in response to a challenge to TT in its nursing curriculum. After surveying published research, the panel concluded that "there is not a sufficient body of data, both in quality and quantity, to establish TT as a unique and efficacious healing modality."[116]

A few months later, a University of Alabama at Birmingham research team declared that their own imminent study (financed by a $335 000 federal grant) would be "the first real scientific evidence" for TT.[117,118] This project compared the effects of TT and sham TT on the perception of pain by burn patients. The final report to the funding agency noted statistically significant differences in pain and anxiety in 3 of 7 subjective measurements, but there was no difference in the amount of pain medication requested.[119]

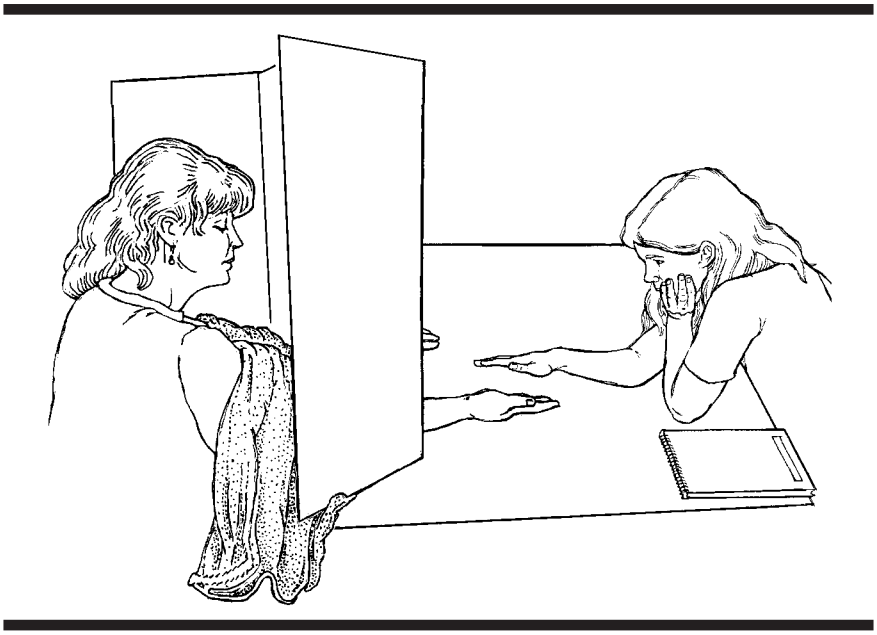

Figure 1.—Experimenter hovers hand over one of subject's hands. Draped towel prevents peeking. Drawing by Pat Linse, Skeptics Society.

With little clinical or quantitative research to support the practice of TT, proponents have shifted to qualitative research, which merely compiles anecdotes.[120] This approach, which involves asking subjects what they feel and drawing conclusions from their descriptions,[17,43,121-128] was sharply criticized by UCHSC's scientific panel.[116]

Both TT theory and technique require that an HEF be felt in order to impart any therapeutic benefit to a subject. Thus, the definitive test of TT is not a clinical trial of its alleged therapeutic effects, but a test of whether practitioners can perceive HEFs, which they describe, in print and in our study, with such terms as *tingling*, *pulling*, *throbbing*, *hot*, *cold*, *spongy*, and *tactile as taffy*. After doing its own survey, the UCHSC panel declared that no one had "even any ideas about how such research might be conducted."[115] This study fills that void.

METHODS

In 1996 and 1997, by searching for advertisements and following other leads, 2 of us (L.R. and L.S.) located 25 TT practitioners in northeastern Colorado, 21 of whom readily agreed to be tested. Of those who did not, 1 stated she was not qualified, 2 gave no reason, and 1 agreed but canceled on the day of the test.

The reported practice experience of those tested ranged from 1 to 27 years. There were 9 nurses, 7 certified massage therapists, 2 laypersons, 1 chiropractor, 1 medical assistant, and 1 phlebotomist. All but 2 were women, which reflects the sex ratio of the practitioner population. One nurse had published an article on TT in a journal for nurse practitioners.

There were 2 series of tests. In 1996, 15 practitioners were tested at their homes or offices on different days for a period of several months. In 1997, 13 practitioners, including 7 from the first series, were tested in a single day.

The test procedures were explained by 1 of the authors (E.R.), who designed the experiment herself. The first series of tests was conducted when she was 9 years old. The participants were informed that the study would be published as her fourth-grade science-fair project and gave their consent to be tested. The decision to submit the results to a scientific journal was made several months later, after people who heard about the results encouraged publication. The second test series was done at the request of a Public Broadcasting Service television producer who had heard about the first study. Participants in the second series were informed that the test would be videotaped for possible broadcast and gave their consent.

During each test, the practitioners rested their hands, palms up, on a flat surface, approximately 25 to 30 cm apart. To prevent the experimenter's hands from being seen, a tall, opaque screen with cutouts at its base was placed over the subject's arms, and a cloth towel was attached to the screen and draped over them (Figure 1).

Each subject underwent a set of 10 trials. Before each set, the subject was permitted to "center" or make any other mental preparations deemed necessary.

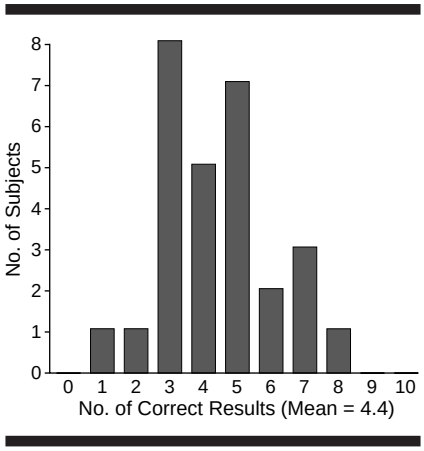

Figure 2.—Distribution of test results.

The experimenter flipped a coin to determine which of the subject's hands would be the target. The experimenter then hovered her right hand, palm down, 8 to 10 cm above the target and said, "Okay." The subject then stated which of his or her hands was nearer to the experimenter's hand. Each subject was permitted to take as much or as little time as necessary to make each determination. The time spent ranged from 7 to 19 minutes per set of trials.

To examine whether air movement or body heat might be detectable by the experimental subjects, preliminary tests were performed on 7 other subjects who had no training or belief in TT. Four were children who were unaware of the purpose of the test. Those results indicated that the apparatus prevented tactile cues from reaching the subject.

The odds of getting 8 of 10 trials correct by chance alone is 45 of 1024 (P=.04), a level considered significant in many clinical trials. We decided in advance that an individual would "pass" by making 8 or more correct selections and that those passing the test would be retested, although the retest results would not be included in the group analysis. Results for the group as a whole would not be considered positive unless the average score was above 6.7 at a 90% confidence level.

RESULTS

Initial Test Results

If HEF perception through TT was possible, the experimental subjects should have each been able to detect the experimenter's hand in 10 (100%) of 10 trials. Chance alone would produce an average score of 5 (50%).

Before testing, all participants said they could use TT to significant therapeutic advantage. Each described sensory cues they used to assess and manipulate the HEF. All participants but 1 certified massage therapist expressed high confidence in their TT abilities, and even the aforementioned certified massage therapist said afterward that she felt she had passed the test to her own satisfaction.

Table 2.—Statistical Analysis

Statistical Function	Initial Test (n = 15)	Follow-up Test (n = 13)
Mean (95% confidence interval)	4.67 (3.67-5.67)	4.08 (3.17-4.99)
SD	1.74	1.44
α (1-tailed test)	.05	.05
t statistic	−0.7174	−2.222
Upper critical limit of Student *t* distribution	1.761	1.782
Alternative hypothesis, μ = 6.67	0.9559	0.9801
Alternative hypothesis, μ = 7.50	0.999644	0.999953

In the initial trial, the subjects stated the correct location of the investigator's hand in 70 (47%) of 150 tries. The number of correct choices ranged from 2 to 8. Only 1 subject scored 8, and that same subject scored only 6 on the retest.

After each set of trials, the results were discussed with the participant. Because all but 1 of the trials could have been considered a failure, the participants usually chose to discuss possible explanations for failure. Their rationalizations included the following: (1) The experimenter left a "memory" of her hand behind, making it increasingly difficult in successive trials to detect the real hand from the memory. However, the first attempts (7 correct and 8 incorrect) scored no better than the rest. Moreover, practitioners should be able to tell whether a field they are sensing is "fresh." (2) The left hand is the "receiver" of energy and the right hand is the "transmitter." Therefore, it can be more difficult to detect the field when it is above the right hand. Of the 72 tests in which the hand was placed above the subjects' right hand, only 27 (38%) had correct responses. In addition, 35 (44%) of 80 incorrect answers involved the allegedly more receptive left hand—consistent with randomness. Moreover, practitioners customarily use both hands to assess. (3) Subjects should be permitted to identify the experimenter's field before beginning actual trials. Each subject could be given an example of the experimenter hovering her hand above each of theirs and told which hand it is. Since the effects of the HEF are described in unsubtle terms, such a procedure should not be necessary, but including it would remove a possible post hoc objection. Therefore, we did so in the follow-up testing. (4) The experimenter should be more proactive, centering herself and/or attempting to transmit energy through her own intentionality. This contradicts the fundamental premise of TT, since the experimenter's role is analogous to that of a patient. Only the practitioner's intentionality and preparation (centering) are theoretically necessary. If not so, the early experiments (on relatively uninvolved subjects, such as infants and barley seeds), cited frequently by TT advocates, must also be discounted. (5) Some subjects complained that their hands became so hot after a few trials that they were no longer able to sense the experimenter's HEF or they experienced difficulty doing so. This explanation clashes with TT's basic premise that practitioners can sense and manipulate the HEF with their hands during sessions that typically last 20 to 30 minutes. If practitioners become insensitive after only brief testing, the TT hypothesis is untestable. Those who made this complaint did so after they knew the results, not before. Moreover, only 7 of the 15 first trials produced correct responses.

Follow-up Test Results

The 1997 testing was completed in 1 day and videotaped by a professional film crew. Each subject was allowed to "feel" the investigator's energy field and choose which hand the investigator would use for testing. Seven subjects chose her left hand, and 6 chose her right hand.

The test results were similar to those of the first series. The subjects correctly located the investigator's hand in only 53 (41%) of 130 tries. The number of correct answers ranged from 1 to 7. After learning of their test scores, one participant said he was distracted by the towel over his hands, another said that her hands had been too dry, and several complained that the presence of the television crew had made it difficult to concentrate and/or added to the stress of the test. However, we do not believe that the situation was more stressful or distracting than the settings in which many hospital nurses practice TT (eg, intensive care units). Figure 2 shows the distribution of test results.

Our null hypothesis was that the experimental results would be due to chance (μ=5). Our alternative hypothesis was that the subjects would perform at better than chance levels. The t statistic of our data did not exceed the upper critical limit of the Student t distribution (Table 2). Therefore, the null hypothesis cannot be rejected at the .05 level of significance for a 1-tailed test, which means that our subjects, with only 123 of 280 correct in the 2 trials, did not perform better than chance.

Our data also showed that if the practitioners could reliably detect an HEF 2 of 3 times, then the probability that either test missed such an effect would be

less than .05. If the practitioners' true detection rate was 3 of 4, then the probability that our experiment missed it would be less than 3 in 10 000. However, if TT theory is correct, practitioners should always be able to sense the energy field of their patients. We would also expect accuracy to increase with experience. However, there was no significant correlation between the practitioners' scores and the length of time they had practiced TT (r=0.23). We conclude on both statistical and logical grounds that TT practitioners have no such ability.

COMMENT

Practitioners of TT are generally reluctant to be tested by people who are not proponents. In 1996, the James Randi Educational Foundation offered $742 000 to anyone who could demonstrate an ability to detect an HEF under conditions similar to those of our study. Although more than 40 000 American practitioners claim to have such an ability, only 1 person attempted the demonstration. She failed, and the offer, now more than $1.1 million, has had no further volunteers despite extensive recruiting efforts.[129]

We suspect that the present authors were able to secure the cooperation of 21 practitioners because the person conducting the test was a child who displayed no skepticism.

CONCLUSION

Therapeutic touch is grounded on the concept that people have an energy field that is readily detectable (and modifiable) by TT practitioners. However, this study found that 21 experienced practitioners, when blinded, were unable to tell which of their hands was in the experimenter's energy field. The mean correct score for the 28 sets of 10 tests was 4.4, which is close to what would be expected for random guessing.

To our knowledge, no other objective, quantitative study involving more than a few TT practitioners has been published, and no well-designed study demonstrates any health benefit from TT. These facts, together with our experimental findings, suggest that TT claims are groundless and that further use of TT by health professionals is unjustified.

The television program "Scientific American Frontiers" showed excerpts from the second test series on November 19, 1997.

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