

RESEARCH

**Randomized Expectancy-Enhanced
Placebo-Controlled Trial of the Impact of
Quantum BioEnergetics and Mental
Boundaries on Affect**

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Abstract—The present study aimed to extend the findings of a previous, randomized placebo-controlled pilot study (F. E. Permezel and A. J. Rock, *Australian Journal of Parapsychology* 9(1):71–95, 2009) which examined the effect of a subtle energy technique, Quantum BioEnergetics (QBE), and a personality trait, Mental Boundaries, on Positive and Negative Affect. In the present study, 94 participants were administered the *Boundary Questionnaire Short Form* to quantify Mental Boundaries and the *Phenomenology of Consciousness Inventory* (PCI) to quantify pre-test Positive and Negative Affect. Participants were randomly assigned to one of three conditions: QBE, Placebo, or Control. Participants' affective responses to the conditions were retrospectively assessed using the PCI. No significant multivariate effect was found for condition or Mental Boundaries with regard to post-test scores on Positive and Negative Affect, after controlling for pre-test scores. Furthermore, a significant multivariate interaction between the aforementioned factors was not found. The present study's non-significant findings may be due to its more stringent methodological controls or diminished ecological validity relative to Permezel and Rock (2009).

Keywords: subtle energy—energy healing—Mental Boundaries—personality—affect—Quantum BioEnergetics—Phenomenology of Consciousness Inventory

1. Introduction

In the 1970s, Tiller (2004) developed the term “subtle energies”¹ to discriminate between the electromagnetism (EM) component of energy and the components of energy that were not EM, but had demonstrable effects even though they were not measurable using physical tools. Subsequently, Tiller (2004) refined the subtle energy concept to denote all energies other than those

generated via the four fundamental forces of the prevailing paradigm (i.e. EM, strong and weak nuclear energy, and gravitational energy). The ancient Chinese concept of *Ch'i* energy, which has long been manipulated by Tai Ch'i, meditation, and acupuncture, is arguably the best-known example of subtle energy (Feinstein, 2003). Other examples include *prana* (in India and Tibet), *ki* (in Japan), *yesod* (in the Jewish Kabbalistic tradition), and *baraka* (in Sufism) (Feinstein, 2003).

The effects of subtle energy manipulation (via the human mind through intention; without use of physical action) on people, animals, plants, organs, blood, and cells have been widely replicated (e.g., Baldwin and Schwartz, 2006; Braud, 1992; MacKay et al., 2004; Radin, 1992; Rubik et al., 2006; Schlitz et al., 2003; Tiller et al., 2001; Wardell and Weymouth, 2004). However, of particular interest to the current study are findings which suggest that subtle energy can influence affective responses in humans (Brooks et al., 2006; Laidlaw et al., 2003, 2006; Reece et al., 2005). For example, Reece et al. (2005) investigated the effects of giving and receiving Johrei on well-being. Participants reported significantly higher levels of positive feelings coupled with lower levels of negative feelings after giving or receiving Johrei. Similarly, Brooks et al. (2006) investigated the effect of Johrei on substance abuse recovery. Significant improvements in depression and trauma symptoms and vigor were found for the treatment group. However, neither Reece et al. (2005) nor Brooks et al. (2006) used "sham" controls to test for placebo effects.

Numerous studies have also reported *distant* healing intention effects (e.g., Braud and Schlitz, 1991; Rebman et al., 1996). For example, Schlitz and Braud (1997) conducted a meta-analysis of 30 experiments in which claimant healers, and various other self-selected individuals (e.g., self-reported "psychics"), endeavored to influence electrodermal activity in a distant participant. It was concluded that "Results across the experiments showed a significant and characteristic variation during distant intentionality periods, compared with randomly interspersed control periods" (Schlitz and Braud, 1997:62).

It is also important to acknowledge that various subtle energy studies (e.g., Canter et al., 2006; Hall et al., 2007; Taft et al., 2005; Yount et al., 2004) have reported negative findings. For example, Canter et al. (2006) examined the effect of Johrei practice on childhood eczema and general health. No improvements were found on general health outcomes, and "Initial improvements in eczema symptoms and diary recorded illness, could not be separated from seasonal factors and other potential confounders" (Canter et al., 2006:533). In another study, Yount et al. (2004) assessed the effect of qigong healing intentionality on cultured human brain cells. Significantly increased cell proliferation was found for qigong-treated versus sham cultures. However, this finding was not observed in a replication study. Furthermore, Taft et al. (2005) investi-

gated the effect of Johrei on the responsiveness of human cancer cell cultures. Eight Johrei treatment experiments were compared with eight control experiments and it was concluded that “Cell death and proliferation rates of cultured human cancer cells do not appear responsive to Johrei treatment from a short distance” (Taft et al., 2005:2).

Despite the aforementioned negative findings (Yount et al., 2004), it is noteworthy that various researchers (e.g., Laidlaw et al., 2003; Nelson and Schwartz, 2005; Schwartz et al., 2004) have reported that certain personality traits influence phenomenological responses (e.g., affect) to subtle energy techniques. For example, Belief in Paranormal Phenomena (Nelson and Schwartz, 2005) and Absorption (i.e., a tendency to become ensconced in a stimulus) (Laidlaw et al., 2003; Schwartz et al., 2004) have been shown to account for individual differences in susceptibility to subtle energy techniques. However, a potentially relevant personality trait that has been neglected by subtle energy researchers is “Mental Boundaries.”

1.1 Subtle Energy and Mental Boundaries

Hartmann’s Mental Boundary construct refers to the notion that the contents of the human mind (e.g., memories, feelings, thoughts) constitute “. . . parts, regions, functions, or processes that are separate from one another and yet connected with one another” (Hartmann, 1991:4). Individuals with “thin” Boundaries tend to be described as “open,” “sensitive,” and “fluid” (Rawlings, 2001–2002). Funkhouser et al. (2001) reported that individuals with thin Boundaries were more likely to be affected by external and internal stimuli compared with their thick-Boundary counterparts. Furthermore, Krippner et al. (1998) found that thin Boundaries were correlated with experiences of psi phenomena, including a variety of phenomena (e.g., telepathy, energy healing, clairvoyance) related to sensitivity to, and manipulation of, subtle energy. Thus, it seems reasonable to suppose that individuals with thin Boundaries may be more susceptible to subtle energy techniques compared with individuals with thick Boundaries.

1.2 Quantum BioEnergetics

One subtle energy technique that has been neglected by previous research is Quantum BioEnergetics (QBE). This technique consists of the immersion of self or other in subtle energy in order to enable human biology to heal (rebalance) itself (Hocking, 2006). QBE does not involve physical contact between client and practitioner. Instead, subtle energy is “sent” from the practitioner to the client via the hands or eyes. For “distance healings,” subtle energy is sent from the practitioner to the client, sometimes thousands of miles away, merely

by the intention of the practitioner (Hocking, 2006). An important tenet of QBE is that subtle energy can be manipulated by anyone who wishes to benefit one's self and/or others (Hocking, 2006).

The creator of QBE, Melissa Hocking, has trained hundreds of facilitators in Australia and many more in the USA, the UK, India, Europe, and Africa (Hocking, 2006). Additionally, Quantum BioEnergetics International (QBI) instructs field workers from the *Médecins Sans Frontières (Doctors Without Borders)* organization regarding the practice of QBE (Hocking, 2008). There is considerable anecdotal evidence that QBE can induce significant affective changes in recipients, and alleviate cancers, mental illness, chronic fatigue syndrome, AIDS-related diseases, cerebral palsy, autism, and many other serious afflictions (Hocking, 2006). However, despite such anecdotal reports coupled with the increasing international influence of QBE, there has been, to date, only a single published pilot study (Permezel and Rock, 2009) investigating the effects of QBE.

Permezel and Rock's (2009) randomized placebo-controlled pilot study experimentally investigated the effects of QBE and Mental Boundaries on Positive and Negative Affect. Sixty-nine participants were randomly assigned to one of three conditions: QBE, Placebo ("sham"), and Control. In accordance with standard energy healing randomized placebo-controlled protocols (e.g., MacKay et al., 2004; Mansour et al., 1999; Shiflett et al., 2002; Witte and Dundes, 2001), the pilot study's subtle energy practitioner and placebo practitioner roles were occupied by different people. Additionally, the practitioners had direct (i.e., face-to-face) contact with the participants. Significant interactions were found between condition and Mental Boundaries (i.e., "thin" versus "thick") with regard to Positive Affect, Love, and Joy, with the QBE/Thin Boundaries factorial combination associated with the highest mean scores for these dependent variables (DVs). Permezel and Rock concluded that it is pertinent to investigate whether these significant results are replicated using "a placebo condition that improves on the standard randomized placebo-controlled protocols of previous subtle energy research by, for example, separating the practitioner and the participant by an interposing room" (Permezel and Rock, 2009:90).

1.3 The Present Study

The present study, therefore, aimed to extend the findings of a previous pilot study (Permezel and Rock, 2009) by using a randomized expectancy-enhanced placebo-controlled protocol to experimentally investigate the influence of QBE and Mental Boundaries on Positive and Negative Affect. The following hypotheses were formulated:

Hypothesis 1 (H1). There is a difference between the QBE, Placebo, and Control conditions with regard to Positive and Negative Affect.

Hypothesis 2 (H2). There is a difference between participants with thin and thick Boundaries with regard to Positive and Negative Affect.

Hypothesis 3 (H3). There is an interaction between condition and Boundaries with regard to Positive and Negative Affect.

2. Methods

2.1 Participants

Ninety-four individuals participated in the present study (34 men and 60 women). Participants were recruited from Deakin University and the general public using a ballot box placed in the university library and snowball sampling. The mean age was 30.59 ($SD = 1.64$). Participation in the present study was voluntary. All participants were treated according to the “Ethical Principles of Psychologists and Code of Conduct” (American Psychological Association, 1992).

2.2 Materials and Apparatus

Rawlings’ (2001–2002) *Boundary Questionnaire Short Form* (BQ-Sh) was used in the present study to quantify the “thinness” of participants’ Mental Boundaries. The BQ-Sh consists of 46 items with a five-point Likert scale and contains six subscales: Unusual Experiences, Need for Order, Childlikeness, Perceived Competence, Trust, and Sensitivity (Rawlings, 2001–2002). BQ-Sh items include “In my daydreams, people kind of merge into one another or one person turns into another” and “I have had the experience of someone calling me or speaking my name and not being sure whether it was really happening or I was imagining it.” The BQ-Sh has adequate reliability (with alpha coefficients ranging from .69 to .80) and is strongly correlated with the original Boundary Questionnaire ($r = 0.88$), indicating adequate validity (Rawlings, 2001–2002). In the present study, a median split was performed on participants’ Boundary scores. Participants who scored equal to, or greater than, the median were allocated to the “thin” Boundary group, while participants who scored below the median were allocated to the “thick” Boundary group. A median split was preferred to a mean split for distinguishing between thin and thick Boundary scorers primarily because, with six cells in the subsequent multivariate analysis of covariance (MANCOVA) and a relatively small sample size, it was important that the cell sizes were as equal as possible. The median split resulted in the

following n for each factorial combination: thin Boundary/Placebo condition ($n = 16$), thick Boundary/Placebo condition ($n = 16$), thin Boundary/QBE condition ($n = 15$), thick Boundary/QBE condition ($n = 16$), thin Boundary/Control condition ($n = 17$), and thick Boundary/Control condition ($n = 14$).

The *Phenomenology of Consciousness Inventory* (PCI) (Pekala, 1991) was used in the present study to quantify participants' Positive and Negative Affect. The PCI purportedly quantifies the phenomenology of consciousness and consists of 53 items scored on a seven-point Likert scale which ranges from 0 (no or little intensity) to 6 (much or complete intensity) (Pekala, 1985; Pekala and Kumar, 1984, 1986). PCI items include "I felt ecstatic and joyful" versus "I felt no feelings of being ecstatic or joyful" and "I experienced no feelings of love" versus "I experienced very strong feelings of love." With regard to psychometric properties, the PCI has good internal consistency and criterion validity (Pekala et al., 1986) and adequate construct, discriminant (Pekala, 1991; Pekala and Kumar, 1986), and predictive validity (Pekala and Kumar, 1984).

A massage table and cushion were used for the participants to lie on during their stimulus condition.

2.3 Design

The present study consisted of a between-subjects design with three conditions:

1. *QBE condition*. Participants in this condition were alone in a room and *correctly* informed by the experimenter that they would be remotely "sent" subtle energy by a qualified QBE practitioner for 20 minutes.
2. *Placebo condition*. Participants in this condition were alone in a room and *falsely* informed by the experimenter that they would be remotely "sent" subtle energy by a qualified QBE practitioner for 20 minutes.
3. *Control condition*. Participants in this condition were alone in a room and *correctly* informed by the experimenter that they would *not* be remotely "sent" subtle energy by a qualified QBE practitioner for 20 minutes.

2.4 Expectancy-Enhancing Procedure

The present study used a randomized expectancy-enhanced placebo-controlled protocol. Specifically, participants' expectations were held constant across the QBE and Placebo conditions (i.e., participants in the QBE and Placebo conditions were informed that they would receive QBE). In contrast, healing was manipulated (giving QBE healing versus giving a placebo). Thus, expectation-enhanced Placebo participants were, by definition, *erroneously* informed that they would receive a treatment. Consequently, these participants were, in a strict technical sense, not blind because blinding procedures do *not*

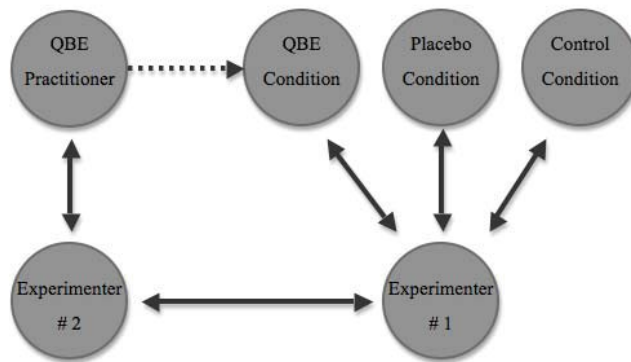


Figure 1. Diagram of experimental design. Note: Unbroken double-headed arrows denote face-to-face interaction between two individuals. In contrast, the broken single-headed arrow denotes a one-way ostensible subtle energy effect.

provide participants with instructions—erroneous or otherwise—regarding which condition they will be administered. Nevertheless, the important point is that neither the present study’s Placebo participants, nor Experimenter 1, who had direct contact with these participants, were aware that they were participating in the Placebo condition. Furthermore, Experimenter 1 had no contact with the QBE practitioner. In contrast, Experimenter 2 coordinated Experimenter 1 and the QBE practitioner. Experimenter 2 therefore had direct contact with these individuals but not with participants. See Figure 1.

It is perhaps noteworthy that if Experimenter 1 knew which of the three conditions all participants were in, or were scheduled to be in, then there may have been an experimenter effect. Thus, it is arguable that it may have been more methodologically stringent to blind Experimenter 1 to all three conditions in the present study because any healing ability that Experimenter 1 may have had might have been selectively applied in order to reinforce the QBE practitioner’s efforts.

However, as previously stated, participants in the QBE and Placebo conditions were informed that “they would be remotely ‘sent’ subtle energy by a qualified QBE practitioner for 20 minutes.” Unbeknownst to Experimenter 1, this statement was *false* in the case of the Placebo group, but *true* in the case of the QBE group. Thus, Experimenter 1 erroneously assumed that all of the QBE and Placebo participants were assigned to the QBE condition. Consequently, there is no reason to expect that any healing ability that Experimenter 1 might

have had was selectively applied to the QBE group and not the Placebo group, thereby reinforcing the QBE practitioner's efforts in the QBE condition. Thus, with regard to the QBE and Placebo conditions, the instructions did not explicitly or implicitly encourage Experimenter 1 to give healing to one group and not another. Moreover, given that a placebo condition, by definition, is designed to test the "power of suggestion," in the present study it seemed more effective to *falsely* inform Placebo participants that they had been assigned to the QBE condition rather than merely create doubt in the participant by, for example, stating that "You will be assigned to one of three conditions, QBE, Placebo, or Control, but I cannot tell you which condition you will be in as I do not know."

As for the issue of not blinding the Control condition, it was necessary that participants in the present study's Control condition were *correctly* informed that they would not be "sent" subtle energy. If participants were given no instructions, or the instruction that "You will be assigned to one of three conditions, QBE, Placebo, or Control, but I cannot tell you which condition you will be in as I do not know," then this may have increased the probability that participants may have erroneously assumed that they were in the QBE condition, thus rendering the Control condition a Placebo condition.

2.5 Procedure

Each participant was individually tested in the same private consulting room² located in Melbourne, Australia. Prior to participation in the present study, prospective participants were administered a Plain Language Statement (PLS) and a Consent Form. The PLS outlined—in non-technical language—the present study's procedure. Prospective participants' informed consent was contingent, in part, on their signed declaration that they understood the PLS. Consequently, participants entered the present study with the expectation that they would be randomly assigned to a subtle energy, Placebo, or Control condition (described in detail below).

All participants were first asked to complete a composite questionnaire consisting of demographic questions, the BQ-Sh, and the PCI. Participants were randomly assigned to one of three conditions: QBE, Placebo, or Control. Participants were administered either the QBE, Placebo, or Control stimulus immediately after completing the composite questionnaire.

QBE condition. Experimenter 1 administered the following instructions to participants in this condition: "Please lie on the massage table with your eyes closed for 20 minutes. During this time the subtle energy practitioner will 'send' you subtle energy remotely from another room in this building." Subsequently, the participant was left alone in a room and was remotely "sent" subtle energy by a qualified QBE practitioner for 20 minutes. The participant lay down on a massage table with his/her eyes closed for 20 minutes. The QBE practitioner

thus had no contact with the participant other than ostensibly “sending” the participant subtle energy from a remote location (i.e. another room in the QBE centre complex, with a sizable interposing room between the practitioner and participant).

Placebo condition. Experimenter 1 administered the following instructions to participants in this condition: “Please lie on the massage table with your eyes closed for 20 minutes. During this time the subtle energy practitioner will ‘send’ you subtle energy remotely from another room in this building.” Subsequently, the participant was left alone in a room but was, in fact, *not* remotely “sent” subtle energy. The participant lay down on a massage table with his/her eyes closed for 20 minutes.

Control condition. Experimenter 1 administered the following instructions to participants in this condition: “Please lie on the massage table with your eyes closed for 20 minutes. During this time you will not be ‘sent’ subtle energy.” Subsequently, the participant was left alone in a room and was *not* remotely “sent” subtle energy. The participant lay down on a massage table with his/her eyes closed for 20 minutes.³

All experiments were conducted on the same massage table. After completion of the conditions, participants’ Positive and Negative Affect was retrospectively assessed using the PCI. Shortly after participation in the research, participants were emailed a note debriefing them regarding which condition they were administered. Participants were encouraged to contact the researchers with any questions.

3. Results

3.1 Preliminary Analyses

In order to assess the quality of the present study’s randomization process, we investigated whether gender, age, and Boundary scores were evenly distributed across the three conditions.

A chi-square test for independence found that there was not a significant difference between conditions with regard to gender, $\chi^2(2, N = 94) = 1.43, p > .05$. A one-way between-groups analysis of variance (ANOVA) revealed that there was not a significant difference between conditions with regard to age, $F(2, 91) = 0.55, p > .05$. Similarly, a one-way between groups ANOVA revealed that there was not a significant difference between conditions with regard to Boundary scores, $F(2, 90) = 0.23, p > .05$. These findings suggest that gender, age, and Boundary scores were evenly distributed across the three conditions.

A chi-square test for independence was conducted to determine if there was a significant difference between conditions (QBE versus Placebo) with regard

TABLE 1
Relationship between Condition and Personal Hypotheses

| Grouping Variable | PERSONAL HYPOTHESIS | | | | TOTAL |
|-------------------|---------------------|---------|---------|--------|-------|
| | QBE | Placebo | Control | Unsure | |
| QBE | 12 | 7 | 3 | 9 | 31 |
| Placebo | 10 | 9 | 2 | 11 | 32 |
| Total | 22 | 16 | 5 | 20 | 63 |

to participants' personal hypotheses about which stimulus condition they had actually been administered (QBE, Placebo, Control, Unsure). It is noteworthy that participants responded to this question *after* they completed the post-test measures. Consequently, this question did not function as a demand characteristic. There was not a significant difference between the QBE and Placebo conditions, $\chi^2(3, N = 63) = 0.82, p > .05$. See Table 1.

In order to examine pre-test versus post-test effects, a series of one-way repeated measures multivariate analyses of variance (MANOVAs) was conducted for each of the three conditions with Time (pre-test versus post-test) as the independent variable (IV) and the PCI major and minor affect dimensions as the DVs. Because the *minor* PCI dimensions (Joy, Love, Sexual Excitement, Anger, Sadness, and Fear) examined in the present study are constituents of *major* PCI dimensions (Positive and Negative Affect), separate MANOVAs were performed for the major and minor dimensions to avoid multi-collinearity (Woodside et al., 1997). Additionally, due to the small sample size and unequal *N* values, Pillai's trace was used in the multivariate tests to determine significant effects (Tabachnick and Fidell, 2007).

For the Placebo condition, no significant multivariate effect for Time was found with regard to Positive and Negative Affect, $F(2, 30) = 2.72, p > .05$; Pillai's trace = .15; partial eta squared (η^2) = .15. Therefore separate univariate analyses were not justified (Tabachnick and Fidell, 2007). Similarly, no significant multivariate effect for Time was found for the combined PCI minor affect dimensions, $F(6, 26) = 2.23, p > .05$; Pillai's trace = .34; partial $\eta^2 = .34$.

For the QBE condition, a significant multivariate effect was found for Time with regard to Positive and Negative Affect, $F(2, 29) = 4.79, p < .05$; Pillai's trace = .25; partial $\eta^2 = .25$. After Bonferroni adjustments (adjusted alpha = $.05/2 = .025$), separate univariate analyses revealed that the mean post-test score for Positive Affect ($M = 2.30$; $SD = 0.92$) was significantly higher compared with

TABLE 2
PCI Post-Test Means (and Standard Deviations) for Each Condition
and Thin Versus Thick Boundaries

| Variable | 1 Placebo | | | 2 QBE | | | 3 Control | | |
|------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | Thick | Thin | Total | Thick | Thin | Total | Thick | Thin | Total |
| Positive Affect | 2.06 (1.17) | 2.80 (1.55) | 2.43 (1.40) | 2.16 (0.88) | 2.44 (0.98) | 2.30 (0.92) | 2.55 (1.40) | 2.26 (1.04) | 2.39 (1.20) |
| Joy | 2.22 (1.47) | 2.94 (1.90) | 2.58 (1.71) | 2.06 (1.40) | 2.53 (1.45) | 2.29 (1.42) | 2.57 (1.57) | 2.50 (1.39) | 2.53 (1.45) |
| Sexual Excitement | 1.36 (1.34) | 2.13 (1.94) | 1.75 (1.68) | 1.09 (1.13) | 1.60 (1.43) | 1.34 (1.29) | 2.11 (1.75) | 1.18 (1.00) | 1.60 (1.44) |
| Love | 2.59 (1.47) | 3.34 (1.66) | 2.97 (1.59) | 3.33 (0.62) | 3.28 (0.61) | 3.31 (0.60) | 3.07 (1.14) | 3.06 (1.13) | 3.06 (1.12) |
| Negative Affect | 0.79 (0.80) | 0.96 (0.80) | 0.88 (0.79) | 1.38 (1.30) | 0.93 (1.04) | 1.16 (1.18) | 0.52 (0.71) | 1.26 (1.06) | 0.93 (0.98) |
| Anger | 0.66 (0.77) | 1.00 (1.03) | 0.83 (0.91) | 1.25 (1.34) | 0.73 (1.08) | 1.00 (1.23) | 0.50 (0.85) | 1.00 (0.87) | 0.77 (0.88) |
| Sadness | 0.78 (0.86) | 1.16 (0.93) | 0.97 (0.90) | 1.59 (1.57) | 1.23 (1.19) | 1.42 (1.39) | 0.57 (0.78) | 1.47 (1.42) | 1.06 (1.24) |
| Fear | 0.94 (1.14) | 0.72 (0.82) | 0.83 (0.98) | 1.28 (1.22) | 0.83 (1.18) | 1.06 (1.20) | 0.50 (0.92) | 1.24 (1.24) | 0.90 (1.15) |

the mean pre-test score ($M = 1.91$; $SD = 0.85$). Similarly, a significant multivariate effect was found for the combined PCI minor affect dimensions, $F(6, 25) = 4.69$, $p < .005$; Pillai's trace = .53; partial $\eta^2 = .53$. After Bonferroni adjustments (adjusted alpha = $.05/6 = .008$), separate univariate analyses revealed that the mean post-test score for Love ($M = 3.31$; $SD = 0.60$) was significantly higher compared with the mean pre-test score ($M = 2.77$; $SD = 0.55$). (See Table 2.)

For the Control condition, a significant multivariate effect for Time was not found for Positive and Negative Affect, $F(2, 29) = 0.94$, $p > .05$; Pillai's trace = .06; partial $\eta^2 = .06$. In contrast, a significant multivariate effect was found for the combined PCI minor affect dimensions, $F(6, 25) = 4.41$, $p < .01$; Pillai's trace = .51; partial $\eta^2 = .51$. After Bonferroni adjustments (adjusted alpha = $.05/6 = .008$), separate univariate analyses revealed that the mean post-test score for Sexual Excitement ($M = 1.60$; $SD = 1.44$) was significantly higher compared with the mean pre-test score ($M = 0.95$; $SD = 1.08$).

3.2 Preliminary Remarks Regarding Hypotheses

In order to address the three hypotheses, two-way between-subjects multivariate analyses of covariance (MANCOVAs) were conducted with stimulus condition (QBE, Placebo, Control) and Boundaries (thin, thick) as the two IVs and the post-test scores on the PCI affect dimensions as the DVs. The pre-test scores on the PCI affect dimensions were used as covariates in the analysis. Separate MANCOVAs were performed for the major and minor dimensions to avoid multicollinearity (Woodside et al., 1997). Additionally, due to the small sample size and unequal N values, Pillai's trace was used in the multivariate tests to determine significant effects (Tabachnick and Fidell, 2007).

3.3 H1: There Is a Difference between the QBE, Placebo, and Control Conditions with Regard to Positive and Negative Affect

After controlling for pre-test scores, a statistically significant multivariate effect was not found for condition with regard to post-test scores on Positive Affect and Negative Affect, $F(4, 172) = 0.55, p > .05$; Pillai's trace = .01; partial $\eta^2 = .01$. Therefore separate univariate analyses were not justified (Tabachnik and Fidell, 2007). There was a strong relationship between the pre-test and post-test scores for Positive Affect and Negative Affect, as indicated by partial η^2 values of .43 and .36, respectively.

After controlling for pre-test scores, the multivariate effect for condition with regard to post-test scores on Joy, Sexual Excitement, Love, Anger, Sadness, and Fear approached significance, $F(12, 156) = 1.61, p = .093$; Pillai's trace = .22; partial $\eta^2 = .05$. The relationships between the pre-test and post-test scores for Joy, Sexual Excitement, Love, Anger, Sadness, and Fear varied from medium to strong, as indicated by partial η^2 values of .29, .17, .23, .10, .11, and .14, respectively. Separate univariate analyses revealed a significant main effect for condition with regard to Love, $F(2, 82) = 5.70, p < .01$; partial $\eta^2 = .12$. Specifically, the QBE condition was associated with greater Love ($M = 3.31$; $SD = 0.60$) compared with the Placebo ($M = 2.97$; $SD = 1.59$) and Control conditions ($M = 3.06$; $SD = 1.12$).

3.4 H2: There Is a Difference between Participants with Thin and Thick Boundaries with Regard to Positive and Negative Affect

After controlling for pre-test scores, a non-significant multivariate effect was found for Boundaries with regard to post-test scores on Positive Affect and Negative Affect, $F(2, 85) = 0.46, p > .05$; Pillai's trace = .01; partial $\eta^2 = .01$.

After controlling for pre-test scores, a non-significant multivariate effect was also found for Boundaries with regard to post-test scores on Joy, Sexual

Excitement, Love, Anger, Sadness, and Fear, $F(6, 77) = 0.31, p > .05$; Pillai's trace = .02; partial $\eta^2 = .02$.

3.5 H3: There Is an Interaction between Condition and Boundaries with Regard to Positive and Negative Affect

After controlling for pre-test scores, a non-significant multivariate interaction was found between condition and Boundaries with regard to post-test scores on Positive Affect and Negative Affect, $F(4, 172) = 0.21, p > .05$; Pillai's trace = .01; partial $\eta^2 = .001$.

After controlling for pre-test scores, a non-significant multivariate interaction was also found between condition and Boundaries with regard to post-test scores on Joy, Sexual Excitement, Love, Anger, Sadness, and Fear, $F(12, 156) = 0.85, p > .05$; Pillai's trace = .12; partial $\eta^2 = .06$.

4. Discussion

The present study was the first to use a randomized expectancy-enhanced placebo-controlled protocol to investigate the effect of QBE and Boundaries regarding Positive and Negative Affect. The results contain numerous primary points of interest. For the QBE condition, a significant univariate effect for Time was found with regard to Positive Affect and Love. This result is broadly consistent with qualitative and anecdotal evidence suggesting that Love is an essential component of the subtle energy experience (Jonas and Crawford, 2004; Vaughan, 2002), and experimental studies which indicate that subtle energy can positively influence affective states in human organisms (e.g., Brooks et al., 2006; Laidlaw et al., 2003, 2006; Permezel and Rock, 2009; Reece et al., 2005). In contrast, a significant multivariate Time effect was not found for the Placebo condition. This finding is consistent with previous research (Permezel and Rock, 2009) which suggests that the QBE effect is perhaps not entirely reducible to a placebo effect.

Interestingly, however, the Control condition was associated with a significant univariate effect for Time with regard to Sexual Excitement. The reasons for this result are unclear. It is possible that the QBE and Placebo participants were preoccupied by the notion that they were receiving QBE. In contrast, Control participants had no instructions to preoccupy their thoughts and, therefore, may have engaged in daydreaming. In this context, for Controls the massage table may have functioned as an eroticized cue that facilitated the cognitive rehearsal of sexual fantasies. Regardless, it may prove edifying to extend the present study by including semi-structured interviews designed to elicit the essential aspects of percipients' phenomenology associated with exposure to QBE, Placebo, and Control conditions. The resultant qualitative data may pro-

vide insights regarding why participants in the Control condition reported a significant post-test increase in Sexual Excitement, whereas participants in the QBE and Placebo conditions did not.

There was not a significant multivariate effect for condition with regard to the combined PCI major affect dimensions (Positive and Negative Affect), thus failing to support H1. This finding is consistent with the results of Permezel and Rock's (2009) pilot study. Similarly, in contrast to our expectations, there was not a significant multivariate effect for condition with regard to the PCI minor affect dimensions (Joy, Sexual Excitement, Love, Anger, Sadness, and Fear). This result is inconsistent with previous studies (e.g., Jang and Lee, 2004 [Qi therapy]; Laidlaw et al., 2003, 2006 [Johrei]; Permezel and Rock, 2009 [QBE]; Reece et al., 2005 [Johrei]; Shiflett et al., 2002 [Reiki]). However, our non-significant result is broadly consistent with the negative findings of numerous studies (e.g., Hall et al., 2007; Taft et al., 2005; Yount et al., 2004) that investigated the effect of subtle energy on cell cultures rather than affective states of human participants. It is noteworthy, however, that the present study's multivariate effect for condition with regard to post-test scores on Joy, Sexual Excitement, Love, Anger, Sadness, and Fear was approaching significance. Specifically, a significant main effect was found for condition with regard to Love, with the QBE condition associated with greater Love relative to the Placebo and Control condition. This finding is consistent with previous research (e.g., Jonas and Crawford, 2004).

Interestingly, the partial η^2 associated with the non-significant multivariate effect regarding Positive and Negative Affect was .013, whereas in Permezel and Rock's (2009) pilot study the partial η^2 was much larger (i.e., .192). It is arguable that this effect size disparity is due, at least in part, to the more methodologically stringent design implemented in the present study. As previously stated, in the present study the QBE practitioner and participants were separated by an interposing room and the Placebo condition was expectancy-enhanced. In contrast, in Permezel and Rock's (2009) pilot study the QBE practitioner and "sham" practitioner roles were necessarily occupied by different people and there was face-to-face interaction between the practitioners and the participants. Thus, in the aforementioned pilot study the potential existed for subtle cueing and, thus, "for information that is subliminally acquired by participants and, therefore, insufficient to generate conscious awareness yet able to precipitate an affective response" (Permezel and Rock, 2009:89). However, it is noteworthy that while the present study may have greater internal validity relative to Permezel and Rock's pilot study, it is arguable that the pilot study had greater ecological validity on the grounds that real-world QBE sessions typically involve face-to-face interaction between practitioners and clients.

There was not a significant multivariate effect for Boundaries with regard

to the combined PCI major or minor affect dimensions, thus failing to support H2. This finding suggests that there was not a significant difference between thin and thick Boundary participants with regard to Positive and Negative Affect when neglecting to consider the influence of stimulus condition. This finding is consistent with the results of Permezel and Rock (2009).

In contrast to our predictions, no significant interactions were found between condition and Boundaries with regard to the PCI major or minor affect dimensions. Similarly, the effect sizes for the PCI major (partial $\eta^2 = .001$) and minor (partial $\eta^2 = .061$) affect dimensions were small. In contrast, for Permezel and Rock's (2009) pilot study, the partial η^2 was .208 and .200 for the PCI major and minor affect dimensions, respectively. There may have been a greater incidence of subtle cueing in the pilot study due to its less stringent methodological controls relative to the present study, and thin Boundary participants in the pilot study may have been more susceptible to this subtle cueing compared with thick Boundary participants. This might explain why larger effect sizes were obtained in the pilot study relative to the present study. Alternatively, perhaps "remote QBE" is significantly different in type or quality relative to the subtle energy effect of "face-to-face QBE" that was investigated by Permezel and Rock (2009). In any event, in the present study the thin Boundary/Placebo factorial combination was associated with the highest mean scores for Positive Affect. This trend is broadly inconsistent with: (1) previous studies that indicated that thin Boundary individuals tend to be more affected by external and internal stimuli (Funkhouser et al., 2001), and thus, presumably stimulus conditions including the present study's QBE condition; and (2) previous research that has identified a positive association between thin Boundaries and psi phenomena (e.g., Krippner et al., 1998).

A number of limitations warrant consideration. The present study's sample size was too small to allow comparisons of very "thin" versus very "thick" Boundary participants within each condition with regard to Positive and Negative Affect. It is arguable that by removing the second and third quartile of the Boundary scores and, thus, retaining only the extreme Boundary participants, the magnitude of the effect with regard to affective response may have been larger.

In the present study, Experimenter 1 had direct contact with the participants but not the QBE practitioner. In contrast, Experimenter 2 coordinated Experimenter 1 and the QBE practitioner and, thus, had direct contact with these individuals but not with participants. Thus, Experimenter 2 was necessarily not blind to the Placebo condition. Consequently, the potential existed for information to be subliminally acquired by Experimenter 1 via subtle cueing from Experimenter 2 which may have, in turn, cued participants. In future studies, Yount et al.'s (2004) experimental protocol might be modified so that

Experimenter 2 could use a mechanical chime to signal Experimenter 1 via an intercom system when a testing session is scheduled to commence and conclude so that Experimenter 1 could escort the participants in and out of the consulting room at the designated times. This would further restrict the potential for subtle cueing of Experimenter 1 by Experimenter 2. However, it is arguable that the present study's negative findings suggest that if, in fact, subtle cueing did occur, participants' affective responses were not influenced. Furthermore, the non-significant difference between the QBE and Placebo conditions regarding participants' personal hypotheses about which stimulus condition they had actually been administered suggests that if subtle cueing did occur, then Placebo participants were no more or less influenced than QBE participants. Nevertheless, it is possible that in the present study some psi-gifted participants may have received information telepathically from the mind of Experimenter 2 regarding whether a particular trial was a treatment or placebo, or perhaps precognitively from the future moment when they were debriefed regarding which condition they were administered.

In conclusion, the present study's failure to replicate the significant results reported by Permezel and Rock (2009) is broadly consistent with previous studies (e.g., Canter et al., 2006; Taft et al., 2005) that do not support the existence of subtle energies. The present study's non-significant findings may be due to its more stringent methodological controls or diminished ecological validity relative to Permezel and Rock (2009). However, for the QBE condition, a significant effect for Time was found with regard to Positive Affect and Love. In contrast, a significant Time effect was not found for the Placebo condition, suggesting that the QBE effect is perhaps not entirely reducible to a placebo effect. It will be instructive to determine whether the results of the present study are replicated with a larger sample size and methodological controls which further restrict the potential for subtle cueing of an experimenter who is required to interact with participants in an expectancy-enhanced placebo condition.

Notes

- ¹ For the purpose of the present study, when we use the term "subtle energy" we are referring to "ostensible subtle energy."
- ² It is important to note that the QBE practitioner used intention to purportedly uncondition the experiment space from an allegedly highly subtle energy-affected space to an unaffected space for the Placebo and Control conditions. This may be an important procedural step given Tiller et al.'s (2004) finding that a space that is merely "conditioned" to subtle energy, but with no specific person or intention present, can produce significant subtle energy effects.
- ³ In the present study, a stimulus condition length of 20 minutes was used because significant subtle energy effects have been repeatedly found in previous research with stimulus conditions of 20 minutes or shorter (e.g., Brooks et al., 2006; Laidlaw et al., 2003, 2006; Reece et al., 2005).

References

- American Psychological Association (1992). Ethical principles of psychologists and code of conduct. *American Psychologist*, *47*, 1597–1611.
- Baldwin, A., & Schwartz, G. (2006). Personal interaction with a Reiki practitioner decreases noise-induced microvascular damage in an animal model. *Journal of Alternative and Complementary Medicine*, *12*, 15–22.
- Braud, W., & Schlitz, M. (1991). Consciousness interactions with remote biological systems: Anomalous intentionality effects. *Subtle Energies*, *2*, 1–46.
- Braud, W. G. (1992). Human interconnectedness: Research indications. *ReVision: A Journal of Consciousness and Transformation*, *14*, 140–148.
- Brooks, A., Schwartz, G., Reece, K., & Nangle, G. (2006). The effect of Johrei healing on substance abuse recovery: A pilot study. *Journal of Alternative and Complementary Medicine*, *12*, 625–631.
- Canter, P. H., Brown, L. B., Greaves, C., & Ernst, E. (2006). Johrei Family Healing: A pilot study. *Evidence-Based Complementary and Alternative Medicine*, *3*, 533–540.
- Feinstein, D. (2003). Subtle energy: Psychology's missing link. *Noetic Sciences Review* *35*(64), 8–21.
- Funkhouser, A., Wurmle, O., Cornu, C., & Bahro, M. (2001). Boundary Questionnaire results in the mentally healthy elderly. *Dreaming*, *11*, 83–88.
- Hall, Z., Luu, T., Moore, D., & Yount, G. (2007). Radiation response of cultured human cells is unaffected by Johrei. *Annals of Oncology*, *4*, 191–194.
- Hartmann, E. (1991). *Boundaries in the Mind*. New York: BasicBooks.
- Hocking, M. (2006). *A Healing Initiation*. Melbourne, Australia: Brolga.
- Hocking, M. (2008). *Proposal: Sharing the Healing around the World*. Unpublished report.
- Jang, H., & Lee, M. (2004). Effects of qi therapy (external qigong) on premenstrual syndrome: A randomized placebo-controlled study. *Journal of Alternative and Complementary Medicine*, *10*, 456–462.
- Jonas, W., & Crawford, C. (2004). The healing presence: Can it be reliably measured? *Journal of Alternative Complementary Medicine*, *10*, 751–756.
- Krippner, S., Wickramasekera, I., Wickramasekera, J., & Winstead, C. (1998). The Ramtha phenomenon: Psychological, phenomenological, and geomagnetic data. *Journal of the American Society for Psychical Research*, *92*(1):1–24.
- Laidlaw, T., Naito, A., Dwivedi, P., Enzor, N., Brincat, C., & Gruzelier, J. (2003). Mood changes after self-hypnosis and Johrei prior to exams. *Contemporary Hypnosis*, *20*, 25–40.
- Laidlaw, T., Naito, A., Dwivedi, P., Hansi, N., Henderson, D., & Gruzelier, J. (2006). The influence of 10 min of the Johrei healing method on laboratory stress. *Complementary Therapies in Medicine*, *14*, 127–132.
- MacKay, N., Hansen, S., & McFarlane, O. (2004). Autonomic nervous system changes during Reiki treatment: A preliminary study. *Journal of Alternative and Complementary Medicine*, *10*, 1077–1081.
- Mansour, A. A., Beuche, M., Laing, G., Leis, A., & Nurse, J. (1999). A study to test the effectiveness of placebo Reiki standardization procedures developed for a planned Reiki efficacy study. *Journal of Alternative and Complementary Medicine*, *5*, 153–164.
- Nelson, L., & Schwartz, G. (2005). Human biofield and intention detection: Individual differences. *Journal of Alternative and Complementary Medicine*, *11*, 93–101.
- Pekala, R. (1985). A psychophenomenological approach to mapping and diagramming states of consciousness. *Journal of Religion and Psychical Research*, *8*, 199–214.
- Pekala, R. (1991). *Quantifying Consciousness: An Empirical Approach*. New York: Plenum Press.
- Pekala, R., & Kumar, V. (1984). Predicting hypnotic susceptibility by a self-report phenomenological state instrument. *American Journal of Clinical Hypnosis*, *27*, 114–121.
- Pekala, R., & Kumar, V. (1986). The differential organization of the structures of consciousness during hypnosis and a baseline condition. *Journal of Mind and Behavior*, *7*, 515–540.
- Pekala, R., Steinberg, J., & Kumar, V. (1986). Measurement of phenomenological experience:

- Phenomenology of Consciousness Inventory. *Perceptual and Motor Skills*, 63, 983–989.
- Permezel, F. E., & Rock, A. J. (2009) Quantum BioEnergetics, mental boundaries, and affective response: A randomized placebo-controlled pilot study. *Australian Journal of Parapsychology*, 9(1), 71–95.
- Radin, D. (1992). *The Conscious Universe: The Scientific Truth of Psychic Phenomena*. San Francisco: Harper Edge.
- Rawlings, D. (2001–2002). An exploratory factor analysis of Hartmann's Boundary Questionnaire and an empirically-derived short version. *Imagination, Cognition and Personality*, 21, 131–144.
- Rebman, J. M., Radin, D. I., Hapke, R. A., & Gaughan, K. Z. (1996). Remote influence of the autonomic nervous system by a ritual healing technique. In *Proceedings of Presented Papers, 39th Annual Parapsychological Association Convention* (pp. 133–147). San Diego, CA.
- Reece, K., Schwartz, G., Brooks, A., & Nangle, G. (2005). Positive well-being changes associated with giving and receiving Johrei healing. *Journal of Alternative and Complementary Medicine*, 11, 455–457.
- Rubik, B., Brooks, A., & Schwartz, G. (2006). In vitro effect of Reiki treatment on bacterial cultures: Role of experimental context and practitioner well-being. *Journal of Alternative and Complementary Medicine*, 12, 7–13.
- Schlitz, M., & Braud, W. G. (1997). Distant intentionality and healing: Assessing the evidence. *Alternative Therapies*, 3(6), 62–73.
- Schlitz, M., Radin, D., Malle, B., Schmidt, S., Utts, J., & Yount, G. (2003). Distant healing intention: Definitions and evolving guidelines for laboratory studies. *Alternative Therapies*, 9(3), 31–43.
- Schwartz, G., Swanick, S., Sibert, W., Lewis, D., Lewis, S., Nelson, L., Jain, S., Mallory, L., Foust, L., Moore, K., Tussing, D., & Bell, I. (2004). Biofield detection: Role of bioenergy awareness training and individual differences in absorption. *Journal of Alternative and Complementary Medicine*, 10, 167–169.
- Shiflett, S., Nayak, S., Bid, C., Miles, P., & Agostinelli, S. (2002). Effect of Reiki treatments on functional recovery in patients in post-stroke rehabilitation: A pilot study. *Journal of Alternative and Complementary Medicine*, 8, 755–763.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). Boston: Pearson.
- Taft, R., Moore, D., & Yount, G. (2005) Time-lapse analysis of potential cellular responsiveness to Johrei, a Japanese healing technique. *BMC Complementary and Alternative Medicine*, 5, 2.
- Tiller, W. (2004). A personal perspective on energies in future energy medicine. *Journal of Alternative and Complementary Medicine*, 10, 867–877.
- Tiller, W., Dibble, W., & Kohane, M. (2001). *Conscious Acts of Creation: The Emergence of a New Physics*. Walnut Creek, CA: Pavior Publishing.
- Tiller, W., Dibble, W., Nunley, R., & Shealy, C. (2004). Toward general experimentation and discovery in conditioned laboratory spaces: Part I. Experimental pH change findings at some remote sites. *Journal of Alternative and Complementary Medicine*, 10, 145–157.
- Vaughan, F. (2002). What is spiritual intelligence? *Journal of Humanistic Psychology*, 42(2), 16–33.
- Wardell, D., & Weymouth, K. (2004). Review of studies of healing touch. *Journal of Nursing Scholarship*, 36, 147–154.
- Witte, D., & Dundes, L. (2001). Harnessing life energy or wishful thinking? Reiki, placebo Reiki, meditation, and music. *Alternative and Complementary Therapies*, 7, 304–309.
- Woodside, L., Kumar, V., & Pekala, R. (1997). Monotonous percussion drumming and trance postures: A controlled evaluation of phenomenological effects. *Anthropology of Consciousness*, 8, 69–87.
- Yount, G., Solfvin, J., Moore, D., Schlitz, M., Reading, M., Aldape, K., & Qian, Y. (2004). In vitro test of external Qigong. *BMC Complementary and Alternative Medicine*, 4, 5.