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Quantum BioEnergetics, Mental Boundaries, and Affective Response: A Randomized Placebo-Controlled Pilot Study

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Abstract: Previous research has demonstrated the effects of ostensible subtle energy on physical systems and subjective experience. However, one subtle energy technique that has been neglected by previous studies, despite anecdotal support for its efficacy, is Quantum BioEnergetics (QBE). Furthermore, personality traits that influence subtle energy effects remain unclear, and previous experimental studies have not investigated the constructs of Love and Joy, despite qualitative and anecdotal reports indicating that these variants of positive affect are essential elements of the subtle energy experience. The aim of the present study was to investigate experimentally the effects of QBE, and the personality trait Mental Boundaries, on positive and negative affect. Participants (*N* = 69) were administered the *Boundary Questionnaire Short Form* to quantify Boundaries, and then randomly assigned to one of three conditions: QBE, Placebo ("sham"), or Control. Affect was retrospectively assessed using the Positive and Negative Affect subdimensions of the *Phenomenology of Consciousness Inventory* (PCI). As predicted, a significant multivariate effect for condition was found with regards to the PCI subdimensions: Joy, Sexual Excitement, Love, Anger, Sadness, and Fear. In contrast to our expectations, a significant multivariate effect was not found for Boundaries with regards to the combined PCI-Affect variables. As hypothesized, significant interactions were found between condition and Boundaries with regards to Positive Affect, Love and Joy, with the QBE/Thin Boundaries factorial combination associated with the highest mean scores for these dependent variables. It will be prudent to ascertain whether these results are replicated in a larger sample and a placebo condition that improves on the standard randomized placebo-controlled protocols of previous subtle energy research.

Keywords: affect, energy healing, mental boundaries, personality, Phenomenology of Consciousness Inventory, quantum bioenergetics, subtle energy.

INTRODUCTION

Energy may be defined as a force that produces physical change (Halliday, Resnick, & Walker, 2001). The energy variants that we are familiar with are electromagnetism (EM), strong and weak nuclear energy, and gravitational energy (Feinstein, 2003; Halliday et al., 2001). It is commonly accepted in modern science that there is an EM field around and inside the physical body due to the electrical potentials established by chemical processes in the body's cells (Tiller, 2004).

While the EM field of the human body may be medically accepted, it cannot account for all observed phenomena of the human body, especially with respect to the effects of alternative and complementary therapies (e.g., acupuncture, Reiki, Johrei, Qi Therapy, Healing Touch) and meditation (Feinstein, 2003; Tiller, 2004). A number of scientists (e.g., Savva, 1999; Schwartz, 2007; Tiller, 2004) propose that these effects are caused by an immeasurable "subtle" energy that is separate to, but interacts with, the other known energy groups. In the 1970s, Tiller developed the term "subtle energies"[1] to discriminate between the EM component of energy associated with these alternative therapies and the components of energy that were not EM, had demonstrable effects, but were immeasurable by physical tools (Tiller, 2004). Tiller (2004) further defined subtle energy as all fields other than those generated via the four fundamental forces of the prevailing paradigm.

The ancient Chinese concept of *Ch'i* energy, which has long been manipulated by Tai Ch'i, meditation and acupuncture (subtle energy techniques), is arguably the best-known example of subtle energy (Feinstein, 2003). Other examples include *ki* (in Japan), *prana* (in India and Tibet), *baraka* (in Sufism), and *yesod* (in Jewish Kabbalistic tradition) (Feinstein, 2003). The stimulation of specific "subtle energy points" has been in use in China and other parts of the world for at least 5000 years (Feinstein & Eden, 2008).

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 has been widely replicated (e.g., Braud, 1992; Radin, 1992; Schlitz et al., 2003; Tiller, Dibble, & Kohane, 2001). The notion of the mind affecting physical systems without the use of a physical action may seem untenable to many scientists, but it is, in fact, an idea well accepted and documented in the realms of Quantum Mechanics

[1] For the purpose of the present study, when we use the term "subtle energy" we are referring to "ostensible subtle energy."

(Mandl, 2003).[2] Indeed, this connection between the physical sciences and subtle energy has been extensively explored (e.g., Tiller, 2004; Tiller & Dibble, 2003).

Previous Subtle Energy Research

Subtle energy theory is more controversial than one might think given the historical (Feinstein & Eden, 2008) and anecdotal basis (e.g., Brennan, 1988; Hocking, 2006), and empirical findings (e.g., Collinge, Wentworth, & Sabo, 2005; Nelson & Schwartz, 2005; Rubik, Brooks, & Schwartz, 2006; Schwartz et al., 2004; Schwartz, 2007; Tiller, 2006; Tiller et al., 2005; Tiller & Dibble, 2007; Tiller, Dibble, Nunley, & Shealy, 2004; Wardell & Weymouth, 2004), which ostensibly support the existence of subtle energy processes. Indeed, previous research has found significant results regarding the effect of subtle energy on physical systems (e.g., the level of microvascular damage in rats; Baldwin & Schwartz, 2006; MacKay et al., 2004; Rubik et al., 2006; Wardell & Weymouth, 2004).

It is important to acknowledge, however, that a plethora of subtle energy studies (e.g., Canter, Brown, Greaves, & Ernst, 2006; Hall, Luu, Moore, & Yount, 2007; Taft, Moore, & Yount, 2005; Yount et al., 2004) have reported negative findings. For example, Taft et al. (2005) investigated 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" (p. 2). In another study, 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" (p. 533). Moreover, 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. In a review of distant healing studies, Astin, Harkness and Ernst (2000)

[2] Quantum Mechanical theory states that the "expectation" of what a measurement will yield influences the said measurement (Hankey, 2007; Mandl, 2003). This principle is conventionally thought to be applicable only to microscopic systems (Tiller, 2004), but could be used to explain the effect of consciousness (intention, emotion, mind or spirit) on macroscopic physical systems, including the effects of positive thinking (Feinstein, 2003).

examined 23 studies and found that "13 (57%) yielded statistically significant treatment effects, 9 showed no effect over control interventions, and 1 showed a negative effect" (p. 903). Furthermore, Jonas (2001) asserts that at a 'Science and Spiritual Healing' conference held in 2000, various energy healing methods (qigong, distant healing and prayer, laying-on-of-hands, Therapeutic Touch, and the effects of intentionality on random systems), were classified according to current "evidence levels." It was concluded that, "Only one area reached the top level of evidence—the effects of mental intentions on random systems" (p. 5).

It is also noteworthy that affective responses to subtle energy techniques (e.g., acupuncture, meditation, Tai C'hi, Johrei, Reiki, and Qi Therapy) have been empirically investigated (e.g., Brooks, Schwartz, Reece, & Nangle, 2006; Jang & Lee, 2004; Laidlaw et al., 2003; Laidlaw et al., 2006; Lee, Rim, & Kang, 2004; Reece, Schwartz, Brooks, & Nangle, 2005). However, the majority of these studies have explored the impact of subtle energy on negative affect, whilst neglecting to consider positive affect (Jang & Lee, 2004; Laidlaw et al., 2003; Laidlaw et al., 2006); possibly assuming that positive and negative affect exist at opposite ends of the same continuum. Previous research that did examine positive affect found a significant increase in positive emotional state (Brooks et al., 2006; Reece et al., 2005), positive well-being and energy (Brooke et al., 2006), and satisfaction (Lee et al., 2004). These studies, however, neglected to consider the construct of Love, which has been indicated in qualitative research (Jonas & Crawford, 2004) and anecdotal reports (Paul, 2005; Vaughan, 2002) to be a fundamental subtle energy effect. Similarly, previous experimental research has not examined the construct of Joy, which, to a lesser extent, has also been indicated in anecdotal reports (Paul, 2005; Quest, 2002; Vaughan, 2002) to be an integral aspect of the subtle energy experience. The field of subtle energy research would therefore benefit from additional studies investigating the relevance of positive affect, with special emphasis on the constructs of Love and Joy.

Additionally, it is salient that while various subtle energy studies included a placebo condition (e.g., Baldwin & Schwartz, 2006; Jang & Lee, 2004; MacKay et al., 2004; Shiflett, Nayak, Bid, Miles, & Agostinelli, 2002), numerous studies (e.g., Brooks et al., 2006; Laidlaw et al., 2003; Laidlaw et al., 2006; Reece et al., 2005) made no attempt to avoid confounds associated with a placebo effect. The Baldwin and Schwartz study that included both a placebo condition and a control condition, found the former to be significantly more beneficial to their participants than the latter. This indicates that in each of the reviewed studies that did not include a placebo condition (e.g., Brooks et al., 2006; Laidlaw et al., 2003; Laidlaw et al., 2006; Reece et al., 2005), it is plausible that the ostensible subtle energy effect is merely a placebo effect. Thus, further investigation

regarding the difference between subtle energy and placebo effects seems warranted.

It is also noteworthy that previous research (e.g., Schwartz et al., 2004) has reported individual differences with regards to susceptibility to subtle energy. Consequently, it may be advantageous to examine the influence of personality traits with regards to the therapeutic effects of subtle energy techniques.

Personality and Subtle Energy

Laidlaw et al. (2003), Nelson and Schwartz (2005), and Schwartz et al. (2004) found that certain personality traits influenced the effect of subtle energy techniques on the subjective experience (e.g., affect) of participants. Interestingly, there was, in the literature reviewed by the present authors (e.g., Brooks et al., 2006; Laidlaw et al., 2006; Reece et al., 2005), no further investigation concerning the influence of personality traits on subtle energy effects. Consequently, research is needed to determine why subtle energy appears to affect some individuals greatly, and some individuals not at all (Schwartz, 2007). The personality traits indicated by previous research to influence individual susceptibility to subtle energy techniques were Absorption (i.e., a tendency to engrossment in stimuli) (Laidlaw et al., 2003; Schwartz et al., 2004) and Belief in Paranormal Phenomena (Nelson & Schwartz, 2005). Another potentially relevant personality trait is Mental Boundaries (Hartmann, 1997).

Mental Boundaries and Subtle Energy

Hartmann's (1991) Mental Boundaries construct is based upon the following notion:

> . . . consider the contents of our minds…we are speaking of parts, of regions, functions, or processes that are separate from one another and yet connected with one another. The boundaries between them are not absolute separations: they can be relatively thick or solid on the one hand, or relatively thin or permeable on the other. (p. 4)

Hartmann (1989) quantified the "thinness" of Boundaries using the *Boundary Questionnaire* (BQ). Rawlings (2001-2002), aware of the need for a less lengthy questionnaire, empirically developed a 46-item short version referred to as the *Boundary Questionnaire Short Form* (BQ-Sh). Funkhouser, Wurmle, Cornu, and Bahro (2001) found that people with thinner Boundaries were more likely to be affected by internal and external

stimuli. In addition, Krippner, et al. (1998) reported that thin Boundary individuals were more likely to experience mystical or paranormal phenomena, including a number of phenomena (telepathy, clairvoyance, energy healing) related to sensitivity to, and manipulation of, subtle energy.[3]

The correlation between thin Boundaries and a tendency to experience mystical or paranormal phenomena is particularly salient (Krippner et al., 1998). Hartmann, Harrison, and Zborowski (2001) proposed two very different hypotheses to explain this connection. The first, and most "parsimonious" explanation is that these paranormal phenomena (e.g., clairvoyance, telepathy) are imaginary and that people with thinner Boundaries have looser and more active imaginations, with a blurring between fantasy and reality and a tendency to elaborate creatively on their perceptions (Hartmann et al., 2001). The second, and more controversial, explanation is that these "paranormal" phenomena are a result of transmission of information (e.g., subtle energy information) between the person and the external world and that people with thin Boundaries are more sensitive to this mode of information (or subtle energy) exchange (Hartmann et al., 2001). Consequently, a person with thinner Boundaries may be more susceptible to subtle energy techniques.

The Present Study

Irrespective of the contentious issues concerning subtle energy, it is indisputable that there is a large amount of public expenditure devoted to alternative and complementary therapies, of which subtle energy practice and theory plays a major role (Xue, Zhang, Lin, & Story, 2006). It is arguable that in order to justify this large expenditure, further empirical research needs to be conducted concerning the ostensible therapeutic benefits of subtle energy.

The reviewed subtle energy literature has highlighted a need for: (1) the implementation of placebo conditions; (2) the investigation of personality traits (e.g., Boundaries) that may influence receptivity to subtle energy techniques; and (3) an exploration of the effects of subtle energy techniques on positive affect, with a special emphasis on Love and Joy.

Furthermore, one subtle energy technique that has been neglected by previous research is Quantum BioEnergetics (QBE). This technique consists

[3] It is perhaps also noteworthy that thinness of Boundaries is positively correlated with Transliminality (Sherwood & Milner, 2004-2005). Transliminality was foreseen by William James and, subsequently, operationally defined by Thalbourne who designed the Transliminality Scale (Lange, Thalbourne, Houran, & Storm, 2000).

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 contact between client and practitioner. Instead, subtle energy is typically "sent" from the practitioner to the client via the hands or eyes (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, UK, India, Europe, and Africa (Hocking, 2006). Additionally, Quantum BioEnergetics International (QBI) instructs field workers from the *Doctors Without Borders* organization regarding the practice of QBE (Hocking, 2008a).

In 2006, Hocking published *A Healing Initiation*, which discussed her experiences with QBE and contained instructions for the reader regarding how to use QBE for their own benefit. The book became an Australian bestseller within the first 6 months of release (Hocking, 2008a). Various New Age publications (e.g., *Nova* magazine and *Insight* magazine) have featured articles by, and about, Hocking and QBE (Hocking, 2008b; Silva, 2008). Additionally, radio shows (e.g., *News for the Soul*) and television programs (e.g., *Visions*) have featured interviews with Hocking regarding QBE (Hocking, 2008a).

There is considerable anecdotal evidence that QBE can induce significant emotional changes in the individual as well as healings from 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, to date, been no published empirical research investigating the effects of QBE.

The aim of the present pilot study was, thus, to investigate experimentally the effects of QBE and Boundaries on positive and negative affect. The hypotheses tested in the present study were based on the reviewed literature and our proposal that the thinness of one's Boundaries may influence susceptibility to QBE and alterations in affect. We formulated the following hypotheses:

1. There is a difference between the QBE, placebo, and control conditions with regards to positive and negative affect.

2. There is a difference between thin and thick Boundaries with regards to positive and negative affect.

3. There is an interaction between condition and Boundaries with regards to positive and negative affect.

METHODS

Participants

Sixty nine people participated in the present study (22 males and 47 females). Participants were recruited from Deakin University and the general public using snowball sampling (i.e., initial participants nominated prospective participants). The mean age for males was 32 years (*SD* = 11 years) and the mean age for females was 35 years (*SD* = 15 years). 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).

Materials (and Apparatus)

Rawlings' (2001-2002) *Boundary Questionnaire Short Form* (BQ-Sh) was used in the present study to quantify the "thinness" of participants' Boundaries. The BQ-Sh consists of 46 items with a five-point Likert scale and contains 6 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 BQ (r = .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 variance 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: thick Boundary/Subtle energy condition (n = 9), thick Boundary/Sham condition (n = 10), thick Boundary/Control condition (n = 12), thin Boundary/Subtle energy condition (n = 14), thin Boundary/Sham condition (n = 10), and thin Boundary/Control condition (n = 10).

The *Phenomenology of Consciousness Inventory* (PCI; Pekala, 1991) is a retrospective phenomenological assessment instrument that purportedly measures 12 major and 14 minor dimensions of consciousness. Only the Positive and Negative Affect dimensions and subdimensions were examined

in the present study. The PCI consists of 53 items scored on a 7-point Likert scale which ranges from '0' ('no or little intensity') to '6' ('much or complete intensity') (Pekala, 1985; Pekala & 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 regards to psychometric properties, the PCI has good internal consistency and criterion validity (Pekala, Steinberg, & Kumar, 1986), and adequate construct, discriminant (Pekala, 1991; Pekala & Kumar, 1986), and predictive validity (Pekala & Kumar, 1984).

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

Design

The present study consisted of a between-subjects design with three conditions: (1) a QBE condition in which a participant was ostensibly "sent" subtle energy by a qualified QBE practitioner for 20 minutes; (2) a placebo condition in which the participant was alone in a room with a sham practitioner for 20 minutes and was not ostensibly "sent" subtle energy; and (3) a control condition in which the participant was alone in a room for 20 minutes.

Procedure

Experiments were conducted for each participant individually in the same private consulting room 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, "sham", or control condition (described in detail below). Participants also entered the study with the expectation that: (1) if a person was present in the room with them during the experimental procedure, then that person was either the subtle energy practitioner or the sham practitioner; and (2) the participant would be blinded regarding which practitioner was the sham until the debriefing session.

All participants were first asked to complete a composite questionnaire consisting of demographic questions and the BQ-Sh. Participants were randomly assigned to one of three conditions: QBE

(subtle energy), placebo ("sham"), and control. Participants were administered either the QBE, placebo, or control stimulus immediately after completing the composite questionnaire. In order to minimize the possibility of subtle cueing, the experimenter instructed: (1) the subtle energy and sham practitioners to restrict their verbal communication with the participant to a pre-prepared script and conduct themselves in the same manner; and (2) the participants to close their eyes for the duration of the subtle energy and sham conditions, thus, rendering the practitioner otherwise unseen and unheard.

QBE condition. A qualified QBE practitioner read the following script to participants in this condition:

> *Hi I'm ..... [Practitioner's Name], one of the subtle energy healing team members, and I'll be conducting your session today. Please come with me [Practitioner takes participant to the experiment room]. Please lie down on the massage table and make yourself comfortable. You will only need to close your eyes and relax for the duration of the session.*
>
> *You will not be touched throughout the session; only at the end I will touch your shoulder like this [Practitioner touches client's shoulder] to notify you of the end of the session. Now close your eyes, relax, and enjoy yourself.*

Participants in this condition were alone in the consulting room with the qualified QBE practitioner. The participant was instructed to lie down on a massage table with his/her eyes closed and was—with no physical contact—ostensibly "sent" subtle energy by the practitioner for 20 minutes. No talking was permitted during the 20 minute stimulus condition.

Placebo ("sham") condition. A sham practitioner read the same script to participants in this condition.[4] Participants in this condition were alone in the consulting room with the sham practitioner. The participant was

[4] 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 & Dundes, 2001), the present study's subtle energy practitioner and placebo practitioner roles were occupied by different people. This particular methodological decision was made because the QBE practitioner advised the present authors that her mere presence would be likely to expose the participants to subtle energy, thus, precluding her from functioning effectively as a sham practitioner. This sentiment has been reported by a number of subtle energy practitioners (see, for example, Connor, 2004).

instructed to lie down on a massage table with his/her eyes closed for 20 minutes. No talking was permitted during the 20 minute stimulus condition.

Control condition. Participants in this condition were alone in the consulting room. The participant was required to lie down on a massage table with his/her eyes closed for 20 minutes.[5]

The present study was single-blind in the sense that participants were not informed of which condition they were randomly assigned to until after their role in the research was complete. All experiments were conducted in the same room and 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 randomly allocated to. Participants were encouraged to contact the researchers with any questions.

RESULTS

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 regards to gender, $\chi^2(2, N = 69) = .307$, $p > .05$. A one-way between-groups analysis of variance (ANOVA) revealed that there was not a significant difference between conditions with regards to age, $F(2, 66) = .979$, $p > .05$. Similarly, a one-way between-groups ANOVA revealed that there was not a significant difference between condition with regards to Boundary scores, $F(2, 61) = .239$, $p > .05$. These findings suggest that gender, age and Boundary scores were evenly distributed across the three conditions.

[5] 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; Laidlaw et al., 2006; Reece et al., 2005).

Preliminary Remarks Regarding Hypotheses

In order to address the three hypotheses, two-way between-subjects multivariate analysis of variances (MANOVAs) were conducted with stimulus condition (QBE; placebo; control) and Boundaries (thin; thick) as the two independent variables (IVs) and the affect dimensions of the PCI as the dependent variables (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, Kumar, & Pekala, 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 & Fidell, 2007).

H1: There is a difference between the QBE, placebo, and control conditions with regards to positive and negative affect. A two-way between-subjects MANOVA was conducted with stimulus condition and Boundaries as the IVs and the PCI major affect dimensions (Positive Affect and Negative Affect) as the DVs. No statistically significant multivariate effect was found between stimulus conditions, $F(4, 118) = 1.293$, $p = .277$; Pillai's trace = .084; partial eta squared (η^2) = .042. Therefore a separate univariate analysis was not justified (Tabachnick & Fidell, 2007).

A separate MANOVA with the minor PCI minor affect dimensions (Joy, Sexual Excitement, Love, Anger, Sadness and Fear) as the DVs, however, showed a statistically significant multivariate effect between stimulus conditions, $F(12, 110) = 2.183$, $p = .017$; Pillai's trace = .385; partial $\eta^2 = .192$. After Bonferroni adjustments (adjusted alpha = 0.05/6 = 0.008), separate univariate analyses revealed a result approaching significance for Sadness ($p = 0.02$; see Table 1). Normally a post hoc analysis would not be performed on a non-significant variable; however, because Sadness was the variable most responsible for the significant multivariate effect, and because its univariate effect was approaching significance, a post hoc analysis was performed to determine which stimulus conditions differed significantly from each other with regards to this variable. Post hoc analyses using Tukey's HSD revealed a significance difference between the QBE and control conditions for Sadness ($p = 0.02$), and a difference approaching significance between the QBE and placebo conditions ($p = 0.08$). As shown in Table 1, the QBE condition was associated with lower Sadness compared to the placebo and control conditions.

Table 1
PCI Major And Minor Affect Dimension Differences Between Means Of Each Condition

PCI Affect Dimensions [6]	1. QBE condition (n = 23)	2. Placebo condition (n = 20)	3. Control condition (n = 22)				
	M (SD)	M (SD)	M (SD)	F	p	Partial η^2	Post Hoc
Positive Affect	2.17 (1.32)	1.49 (1.06)	1.70 (1.08)	1.19	0.31	0.039	
Joy	2.48 (1.30)	1.43 (1.13)	1.77 (1.17)	3.48	0.04	0.106	
Sexual Excitement	1.13 (1.30)	0.95 (1.21)	1.07 (1.34)	0.08	0.93	0.003	
Love	2.85 (1.72)	2.10 (1.33)	2.25 (1.42)	0.84	0.44	0.028	
Negative Affect	0.74 (0.66)	1.09 (0.97)	1.15 (1.02)	1.25	0.30	0.040	
Anger	0.59 (0.67)	1.13 (1.13)	1.20 (1.32)	2.06	0.14	0.065	
Sadness	0.65 (0.75)	1.48 (1.40)	1.68 (1.48)	4.32	0.02*	0.128	1,2*; 1,3**
Fear	0.93 (0.92)	0.68 (0.77)	0.57 (0.79)	1.41	0.25	0.046	

Note. During data screening and cleaning, four cases were eliminated from the MANOVA analysis because, due to missing data, these cases did not have BQ-Sh total scores. * Approaching significance after Bonferroni adjustment; ** Significant after Bonferroni adjustment.

[6] Since two variables were considered for the PCI major affect dimensions, a Bonferroni adjustment was made to control for Type-I errors. The revised criteria for significance for Positive Affect and Negative Affect were $p < 0.025$. Since six variables were considered for the Positive and Negative Affect minor dimensions. A Bonferroni adjustment yielded a new criterion for significance for Joy, Sexual Excitement, Love, Sadness and Fear of $p < 0.008$. Because Anger violated Levene's test of Equality of Error variance it was assigned a more stringent alpha level for significance (i.e., $p < 0.004$).

H2: There is a difference between thin and thick Boundaries with regards to positive and negative affect. No statistically significant multivariate effect was found between thin and thick Boundaries with regards to the PCI major affect dimensions (Positive Affect and Negative Affect), $F(2, 58) = 1.272$, $p = .288$; Pillai's trace = .042; partial $\eta^2 = .042$.

The separate MANOVA conducted with the PCI minor affect dimensions (Joy, Sexual Excitement, Love, Anger, Sadness and Fear) as the DVs, also showed no statistically significant multivariate difference between thin and thick Boundaries, $F(6, 54) = .987$, $p = .444$; Pillai's trace = .099; partial $\eta^2 = .099$ (see Table 2).

Table 2
PCI Major And Minor Affect Dimension Differences Between Means Of Thin And Thick Boundaries

PCI Affect Dimensions	Thin Boundaries (n = 34)	Thick Boundaries (n = 31)			
	M (*SD*)	*M* (*SD*)	*F*	*p*	Partial η^2
Positive Affect	1.96 (1.35)	1.63 (0.96)	0.78	.38	.013
Joy	2.04 (1.42)	1.77 (1.08)	0.25	.62	.004
Sexual Excitement	1.26 (1.42)	.82 (1.05)	2.66	.20	.028
Love	2.53 (1.70)	2.29 (1.31)	0.26	.70	.003
Negative Affect	0.84 (0.82)	1.15 (0.96)	1.56	.22	.026
Anger	0.84 (1.01)	1.10 (1.17)	0.63	.47	.009
Sadness	1.06 (1.14)	1.47 (1.45)	1.57	.32	.017
Fear	0.62 (0.72)	0.85 (0.94)	1.32	.17	.031

H3: There is an interaction between condition and Boundaries with regards to positive and negative affect. For the MANOVA conducted with the PCI major affect dimensions (Positive and Negative Affect) as the DVs, a statistically significant multivariate interaction was found between stimulus condition and Boundaries, $F(4, 118) = 3.661$, $p = .008$; Pillai's trace = .221; partial $\eta^2 = .110$.

After Bonferroni adjustments (adjusted alpha = 0.05/2 = 0.025), separate univariate analyses revealed a statistically significant result for Positive Affect, $p = 0.001$; partial $\eta^2 = .208$, but not for Negative Affect.

As shown in Figure 1, the QBE/Thin Boundaries factorial combination was associated with the highest mean score for Positive Affect.

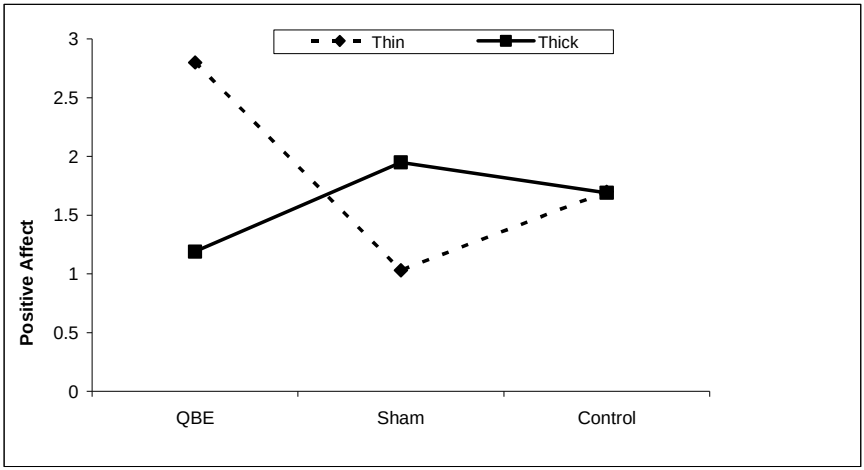

Figure 1. Interaction of stimulus condition and Boundary thinness with regards to Positive Affect.

For the MANOVA conducted with the PCI minor affect dimensions (Joy, Sexual Excitement, Love, Anger, Sadness and Fear) as the DVs, a statistically significant multivariate interaction between stimulus condition and Boundaries was also found, $F(12,110) = 2.286$, $p = .012$; Pillai's trace = .399; partial $\eta^2 = .200$.

After Bonferroni adjustments (adjusted alpha = 0.05/6 = 0.008), separate univariate analyses revealed a statistically significant result for Joy, $p < 0.001$; partial $\eta^2 = .166$, and for Love, $p < 0.001$; partial $\eta^2 = .274$.

As shown in Figure 2 and 3, the QBE/Thin Boundaries factorial combination was associated with the highest mean scores for these DVs.

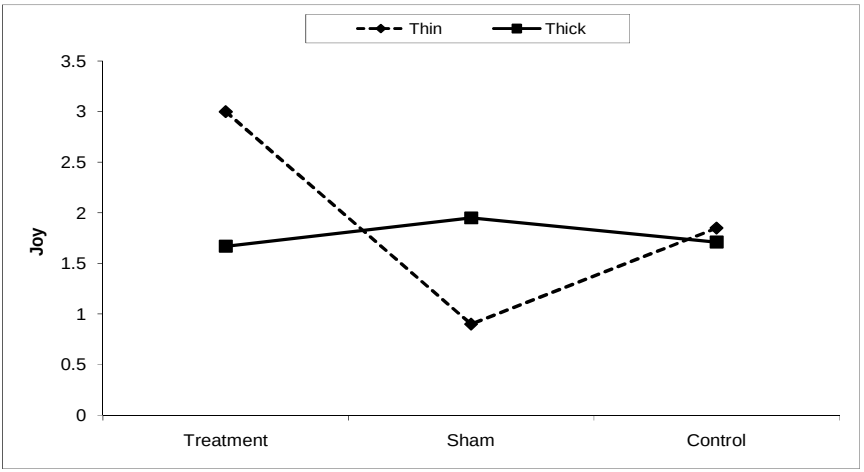

Figure 2. Interaction of stimulus condition and Boundary thinness with regards to Joy.

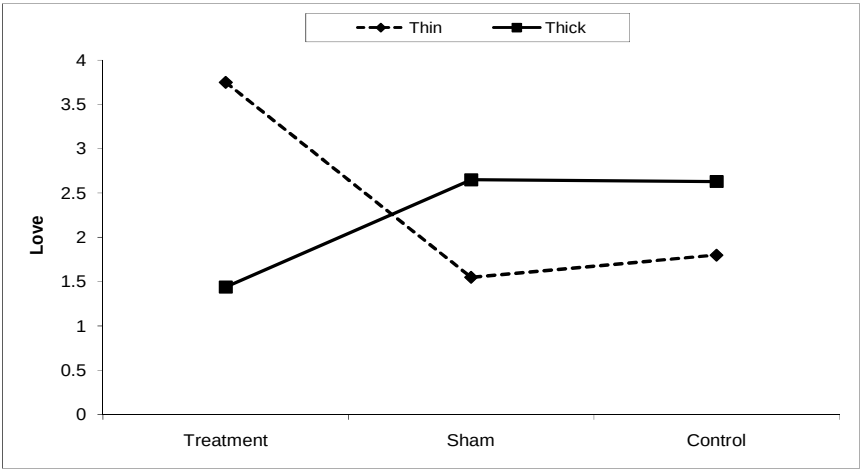

Figure 3. Interaction of stimulus condition and Boundary thinness with regards to Love.

DISCUSSION

The present pilot study was the first to examine the effect of QBE and Boundaries on positive and negative affect. The results contain numerous primary points of interest. There was not a significant multivariate effect for stimulus condition with regards to the combined PCI major affect dimensions (Positive and Negative Affect), thus, failing to support Hypothesis 1. However, in line with our predictions, a statistically significant multivariate effect for stimulus condition was found with regards to the PCI minor affect dimensions (Joy, Sexual Excitement, Love, Anger, Sadness and Fear). This multivariate effect had a large (Cohen, 1988) effect size (partial η^2 = .192) indicating that 19.2% of variance in the DVs was attributable to the stimulus conditions.

Further investigation revealed that Sadness was likely to be primarily responsible for this effect, with a medium-large effect size (η^2 = 0.13), and a univariate effect approaching significance after Bonferroni adjustments. Specifically, Sadness was significantly lower in the QBE condition relative to the control condition, which is consistent with previous studies (e.g., Jang & Lee, 2004 [Qi therapy]; Laidlaw et al., 2003 [Johrei]; Laidlaw et al., 2006 [Johrei]; Reece et al., 2005 [Johrei]; Shiflett et al., 2002 [Reiki]). Additionally, the present study's finding that the lower mean Sadness score in the QBE condition was approaching significance, relative to the placebo condition, is consistent with previous research demonstrating that exposure to a subtle energy technique was associated with a decrease in negative affect relative to placebo controls (e.g., Jang & Lee, 2004).

Interestingly, our aforementioned significant multivariate effect is, broadly speaking, inconsistent with the negative findings of various studies (e.g., Hall et al., 2007; Taft et al., 2005; Yount et al., 2004) that examined the effect of subtle energy on cell cultures rather than affective states of human participants. There are numerous possible explanations for this disparity. For example, clearly computerized time-lapse microscopy procedures provide a more rigorous—and presumably accurate—measure of subtle energy responsiveness than self-report measures designed to quantify non-observable constructs such as affect. Additionally, cell cultures are presumably not sentient entities with the capacity to compromise blinding procedures. In contrast, where studies use human participants, the potential exists for embedded cues associated with subtle energy practitioners—rather than actual subtle energy influences—to induce a response in participants.[7]

[7] However, it is important to note that a number of studies utilizing objective measures and observing presumably non-sentient processes (e.g., Creath & Schwartz, 2005; Radin, 1992;

There was not a significant multivariate effect for Boundaries with regards to the combined PCI major or minor affect dimensions, thus, failing to support Hypothesis 2. This suggests that there was not a significant difference between thin and thick Boundary participants with regards to positive and negative affect, when neglecting to consider the influence of stimulus condition. To the best knowledge of the present authors, Hypothesis 2 has not been investigated by previous research.

In line with our predictions, statistically significant interactions were found between stimulus condition and Boundaries with regards to Positive Affect, Love and Joy. That is, the effect of stimulus condition on these DVs was not, broadly speaking, the same for thin and thick Boundary participants. More specifically, as show in Figure 1, 2, and 3, the QBE/Thin Boundaries factorial combination was associated with the highest mean scores for Positive Affect, Love, and Joy. These results are consistent with: (1) previous findings that individuals with thin Boundaries tend to be more affected by internal and external stimuli (Funkhouser et al., 2001), and thus, presumably stimulus conditions including the present study's QBE condition; and (2) previous studies that have found a relationship between thin Boundaries and psi experiences (e.g., energy healing; Krippner et al., 1998), indicating possible heightened sensitivity to subtle energy. Interestingly, the significant interactions only occurred with regards to the dimensions of Love and Joy (and thus Positive Affect because it is constituted of Love and Joy). This finding is consistent with qualitative and anecdotal evidence indicating that Love (Jonas & Crawford, 2004; Paul, 2005; Vaughan, 2002), and to a lesser extent Joy (Paul, 2005; Quest, 2002; Vaughan, 2002), are essential components of the experience of subtle energy. Furthermore, it is noteworthy that the present study's results appear to provide tentative support for Hartmann et al.'s (2001) hypothesis that people with thin Boundaries are more susceptible to subtle energy, insofar as elevations in Joy and Love may be considered indicative of susceptibility to subtle energy.

It is noteworthy that the QBE/Thin Boundaries factorial combination yielded a higher mean score on Positive Affect, Joy and Love compared to the Placebo/Thick Boundaries and Placebo/Thin Boundaries factorial combinations. This suggests that the QBE effect is perhaps not entirely reducible to a placebo effect. Interestingly, however, the Placebo/Thin Boundaries factorial combination yielded a *lower* mean score on these DVs compared to the Placebo/Thick Boundaries factorial combination. The reason/s for the latter trend is/are unclear. Consequently, it may prove instructive to extend the present study by including semi-structured

Rubik et al., 2006; Tiller et al., 2004; Yang, Xie, Hu, Chen, & Li, 2007) have produced results supportive of subtle energies.

interviews designed to elicit the essential aspects of the thin and thick Boundary participants' QBE and placebo experiences. The resultant qualitative data may provide insights regarding why the thick Boundary participants appear to report a stronger placebo effect with regards to elevations in Love and Joy when compared to their thin Boundary counterparts.

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 regards 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 regards to positive and negative affective response may have been larger.

As previously stated, 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 & Dundes, 2001), the present study's subtle energy practitioner and placebo practitioner roles were occupied by different people. In the present study, this particular methodological decision was informed by empirical evidence suggesting that the mere presence of a subtle energy practitioner may expose participants to subtle energy (Connor, 2004), thereby necessitating the need for a lay-person to function as the sham practitioner. As previously mentioned, in order to minimize the possibility of subtle cueing in the present study, the experimenter instructed: (1) the subtle energy and sham practitioners to restrict their verbal communication with the participant to a pre-prepared script and conduct themselves in the same manner; and (2) the participants to close their eyes for the duration of the subtle energy and sham conditions, thus, rendering the practitioner otherwise unseen and unheard. Nevertheless, the potential exists for information that is subliminally acquired by participants and, therefore, insufficient to generate conscious awareness yet able to precipitate an affective response. Subtle cueing might be more effectively controlled by revising standard energy healing randomized placebo-controlled protocols (e.g., MacKay et al., 2004; Mansour et al.,1999; Shiflett et al., 2002; Witte & Dundes, 2001), so that the practitioner and the participant are separated by an interposing room. This would also eliminate the need for the utilization of a sham practitioner. However, this methodological revision may compromise the ecological validity of future QBE studies, given that real-world QBE sessions typically involve face-to-face interaction between practitioner and client.

Future research may also extend the present study by examining whether other personality traits (e.g., Schizotypy, Absorption, and Transliminality) influence affect during exposure to QBE. Furthermore, rather than merely considering the influence of Boundaries, it may be

prudent to investigate if any of the BQ-Sh subscales (e.g., Need for Order, Childlikeness, and Sensitivity) influence affective response to QBE.

In conclusion, the present pilot study has provided tentative empirical support for anecdotal claims (e.g., Hocking, 2006) that QBE has positive effects. Furthermore, the current findings suggest that the QBE effect is perhaps not entirely reducible to a placebo effect, and certain personality types (i.e., thin Boundaries) are more likely than others to gain therapeutic benefit from QBE. These findings are, therefore, broadly inconsistent with previous studies (e.g., Canter et al., 2006; Taft et al., 2005) that do not support the existence of subtle energies. It will be prudent to ascertain whether the results of the present study are replicated with a larger sample size and 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.

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