

# Effects of Holotropic Breathwork in Personal Orientation, Levels of Distress, Meaning of Life and Death Anxiety in the Context of a Weeklong Workshop: A Pilot Study

## Efectos de la Respiración Holotrópica en la Orientación Personal, Nivel de Malestar, Sentido en la Vida y Ansiedad Ante la Muerte en el Contexto de un Taller Residencial Semanal: un Estudio Piloto

**Iker Puente\***

Universidad Autónoma de Barcelona  
Barcelona, Spain

### Abstract

The purpose of the present study was to explore the effects of Holotropic Breathwork (HB), on levels of distress, meaning of life, death anxiety and personal orientation in a young adult sample in the context of a weeklong workshop, and also the subjective effects and persistent effects of HB. A single group, Pre-Post test design, with three follow-ups (1, 6 months and 12 months after the workshop) was used. A total of 29 subjects, aged 18-35 years, participated in the study. The tests used were the *Brief Symptom Inventory* (BSI), the *Purpose in Life Test* (PIL), the *Death Anxiety Scale* (DAS), the *Personal Orientation Inventory* (POI), the *States of Consciousness Questionnaire* (SCQ) and the *Brief Persisting Effects Questionnaire* (BPEQ). Measures were taken before and after the workshop (four weeks, and 6 months later, for the BSI, PLT, POI and DAS, and 12 months after, for the BPEQ) and during the workshop (for the SCQ). No significant differences were found one month after the workshop. Significant increases of Temporal Competency scale, and in 5 subscales of the PEQ were found six months after the weeklong workshop. HB also occasioned mystical-type or peak experiences in 6 participants. At 12 months, volunteers rated the HB experience as having substantial personal meaning and spiritual significance, and attributed to the experience an increase of personal wellbeing and life satisfaction.

**Keywords:** Holotropic Breathwork, meaning of life, death anxiety, personal orientation, mystical experience, persistent effects

### Abstract

El presente estudio tiene como objetivo principal explorar los efectos de la respiración holotrópica (RH), en el nivel de malestar subjetivo, percepción del sentido de la vida, ansiedad ante la muerte y la orientación personal en una muestra de adultos jóvenes en el contexto de un taller residencial de una semana de duración, así como los efectos subjetivos y los efectos persistentes de la RH. Se utilizó un diseño Pre-Post de medidas repetidas (realizadas 1 6 y 12 meses después del taller de RH) y de grupo único. Un total de 29 sujetos, de entre 18-35 años, participó en el estudio. Las pruebas utilizadas fueron el Inventario Breve de Síntomas (IBS), el Purpose in Life Test (PLT), la Escala de Ansiedad Ante la Muerte (EAAM), el Inventario de Orientación Personal (IOP), el Cuestionario de Estados de Conciencia (CEC) y Cuestionario Breve de Efectos Persistentes (CBEP). Las medidas fueron tomadas antes y después del taller (cuatro semanas y 6 meses más tarde, para la IBS, PLT, IOP y el EAAM, y 12 meses después, para el CBEP) y durante el taller (para el CEC). No se encontraron diferencias significativas un mes después del taller. Se encontraron aumentos significativos en la escala Competencia Temporal, y en 5 subescalas del IOP seis meses después del taller. La RH también ocasionó experiencias cumbre y/o de carácter místico en 6 participantes. A los 12 meses, la experiencia de la RH es frecuentemente valorada por los voluntarios como personal y espiritualmente significativa, y se le atribuye un aumento del bienestar personal y la satisfacción vital.

**Palabras clave:** Respiración Holotrópica, sentido de la vida, ansiedad ante la muerte, orientación personal, experiencia mística, efectos persistentes

Received: December 1, 2013

Accepted: October 4, 2014

## Introduction

A wide range of breathing techniques has been used for centuries in different cultures for religious, ritual and healing purposes. It also has been known for a long time that it is possible to induce changes in consciousness by techniques that involve modifications in the breathing rate, accelerating, retaining and controlling it in different ways (Grof and Grof, 2010). Different specific techniques of breathing can be found, in the *Pranayama* yogic breath techniques (Vishnudevananda, 1974), in *Kundalini* Yoga, Sufi practices, Zen meditation, and in *Vipassana*. Techniques that involve accelerated breathing or hyperventilation can be found in the Inuit's, Sufis, in some Native American groups and in the *Pranayama* (Desikachar, 1985).

In the modern Western culture, however, these types of breathing methods have not been accessible to most. Western medicine has in fact reduced breathing to a physiological process, and physical and psychological signs that appear when the breathing rate is accelerated (which include hypocapnia, palpitations, dizziness and carpopedal spasm) have been considered a pathological condition known as the "hyperventilation syndrome" (Morgan, 1983). This term has been controversial since it was introduced, most of the disagreement being centered on the difficulties in establishing a diagnosis (Bass, 1997).

In the second half of the XX century, different techniques which involve breath and accelerated breathing have been developed in some psychotherapeutic approaches (Grof and Grof, 2010; Lowen, 1976; Orr and Ray, 1983) and a wide range of Eastern breath techniques were introduced and started to be practiced in Western culture. Furthermore, during the last decades, voluntary hyperventilation has been used in psychiatry and clinical psychology as part of some desensitization therapies for the treatment of anxiety disorders (Meuret, Ritz, Wilhelm and Roth, 2005). Voluntary hyperventilation has been demonstrated over different studies to be a helpful tool for diagnosis and desensibilization in the treatment of anxiety and has been found to be safe after medical screening for some contraindicated conditions (Meuret et al, 2005; Zvolensky and Eifert, 2001). Thus, hyperventilation is now part of the tools for the treatment of anxiety disorders.

In the mid 1970's, Stanislav and Christina Grof developed the Holotropic Breathwork technique (Grof, 1988, 2000; Grof and Grof, 2010), after two decades working with LSD and other psychedelic substances in psychotherapy (Grof, 1972, 1973, 1975, 1980). This method was conceived as a non-drug way of accessing non-ordinary states of consciousness or "holotropic states", a neologism proposed by S. Grof (2000).

Holotropic Breathwork (HB) is an experientially oriented psychotherapeutic technique that involves diverse elements, including evocative music, elective bodywork and accelerated breathing. Individual and group sessions are possible, but the group therapy context is the most commonly used. The most characteristic element of this procedure, compared with other psychotherapeutic methods, is the prolonged, voluntary hyperventilation or overbreathing (Rhinewine and Williams, 2007). To date, few studies have empirically examined the therapeutic potential of this hyperventilation procedure. However, there is some preliminary evidence of the clinical utility of HB (Binarova, 2003; Brewerton, Eyerman, Cappetta and Mithoefer, 2012; Eyerman, 2013; Hanratty, 2002; Holmes, 1993; Holmes, Morris, Clancey and Putney 1996; Pressman, 1993; Puente, 2014).

Hanratty (2002) in a single group, pretest-posttest study (N=44), showed that one week after participating in a weeklong HB workshop, participants showed significant reductions in psychiatric symptoms and negative affect. 30% of the English-speaking workshop participants volunteered for the study. Participants were mostly female (73%), highly educated and the mean age was 48.7 years. At 6 months follow up (N=22) reductions in overall psychiatric symptoms were maintained, although reductions in negative affect were no longer significant, and the positive affect showed a significant increase. The author suggests that HB may induce a global reduction in the level of arousal to explain these results. Participants also showed higher scores in the number of Positive Symptoms compared with the established norms of the Brief Symptom Inventory at all time-points, suggesting that these group represent a mildly psychologically distressed population. Participants also score higher on the Marlowe-Crown Social Desirability Scale and the Tellegen Absorption Scale compared with the norms for the general population, indicating high trait absorption and social desirability.

Holmes, Morris, Clancey and Putney (1996) conducted a controlled, non-randomized study, using a pretest-posttest design. The study compared a talk-based experientially oriented therapy (EOT) group with a similar group that received a combination of EOT and six monthly sessions of HB. The two groups (N=24 each) were well matched on demographic variables and the extent of prior psychotherapy treatment. The HB group showed significant reductions in death anxiety and increases in self-esteem compared with the EOT group. The authors concluded that experientially oriented psychotherapies might be a useful therapeutic modality, and suggest that may be particularly useful with long term psychotherapy patients. Similarly, Pressman (1993) conducted a

pretest-posttest controlled study (N=40), examining the effects of HB on psychiatric symptomatology and mood state, comparing a group that received six sessions of HB with a control group that receive six sessions of music therapy. Participants were recruited by advertisement at a counseling center, and were matched by age, gender and ethnicity. The two groups were assessed before and after the six sessions of treatment. After the treatment, the HB group showed a higher reduction in psychiatric symptomatology, and a significant difference in all the scales of the Profile of Mood States.

Recently Puente (2007, 2013, 2014) examined the effects of HrnB in a controlled, non-randomized study, using a pretest-posttest design. The study compared a group of subjects, aged 18-35, who participated for the first time in a weekend workshop where HrnB was used, with a control group that did not receive any alternative treatment. Both groups (N=31) were matched by age, gender and level of studies. The HrnB group showed a significant reduction in the Global Severity Index of the SCL-R-90, and a significant increase in the meaning of life (measured with the Purpose in Life Test) and in the self-directedness, cooperativeness and self-transcendence dimensions of Cloninger's Temperament and Character Inventory (TCI-R), one-week, one month and six months after participating in the HrnB workshop.

The aim of the present pilot study was to explore the short term, intermediate term and persistent effects of HB, and the subjective effects of HB in the context of a weeklong experiential workshop in a young adult sample. The study analysed, specifically, the relationship between the use of HB and the possible changes on levels of distress, meaning of life, death anxiety and personal orientation with different psychometric test, and also the subjective effects and persistent effects of HB. Based on previous research (Binarova, 2003; Hanratty, 2002; Holmes, Morris, Clancey and Putney, 1996; Puente, 2007) it was hypothesized that participants in the HB weeklong workshop would report a reduction in levels of distress and death anxiety, and an increase in meaning of life, time competency and self-direction. Based on anecdotic observations (Grof, 2000; Grof and Grof, 2010) and previous research with psychedelics (Griffiths, Richards, McCann and Jesse, 2006; Griffiths, Richards, Johnson and Jesse, 2008; Grof, 1972, 1980; Pahnke, 1969; Pahnke, Kurland, Unger, Savage and Grof, 1970), it was also hypothesized that participants would report mystical-type or peak experiences occasioned by the HB, and also persistent effects attributed to the HB experience, 12 months after the workshop.

## Method

### Participants

In this pilot study, a convenient sample was used. Eligible participants were individuals enrolled in a weeklong Holotropic Breathwork (HB) and Vipassana meditation program at a wellness and personal growth center. Eligibility criteria were as follows: aged 18 to 35, English speaking and able to provide informed consent. Both "first breathers" (participants who were exposed to HB for the first time in their life) and those who have previous experience with HB were allowed to take part in the research. No control group was used in the present study.

All the participants of the retreat who completed the inclusion criteria (N=49) were approached about participating in the study. From all the participants of the retreat (N=140), 91 were ineligible and 15 declined to participate, leaving 34 individuals who were interested in participating. The 34 individuals gave consent and completed study assessments prior to the HB sessions. 29 individuals filled out the States of Consciousness Questionnaire (SCQ) after their first HB session. At posttest, we were successful in obtaining complete data in 16 individuals (36.7 % of the eligible subjects) for the BSI, PIL, DAS and POI, one month and six months after the workshop. Baseline data from the participants who did not complete the posttest measure were excluded from the analyses. At 12 month follow-up, 10 of the volunteers filled-out the BPEQ.

Participant who completed all the questionnaires at post-test (N=16) ranged between 19 and 74 years (M=43.6, S.D. = 13.6). Fifty six percent of the participants were female. Participants in the study (N=34) age ranged between 19 and 35 years (Mean=26.6, S.D. =3.7). Nineteen of the participants

**Table 1.** Age, gender, and previous experience with HB for the study volunteers.

		<i>Pre measure (N=34)</i>	<i>Post1 and Post2 measures (N=16)</i>
<i>Age</i>		26.6 (3.7)	26.0 (4.3)
<i>Gender</i>	Man	15 (44.1%)	9 (56.2%)
	Woman	19 (55.9%)	7 (43.8%)
<i>HB experience</i>	HB Yes		
		17 (50%)	9 (56.2%)
	HB No	17 (50%)	7 (43.8%)

**Table 2.** Study design

	Pre-workshop	During the workshop	Post1 (one month after)	Post2 (six months after)	Post3 follow-up (12 months after)
BSI	X		X	X	
PLT	X		X	X	
DAS	X		X	X	
POI	X		X	X	
SCQ		X			
BPEQ					X

were female (55.9%) and fifteen were male (44.1%). 17 participants were “first breathers”, and another 17 had previous experience with HB. Participants who completed all the questionnaires at post-test (N=16) ranged in age from 19 and 34 years (M=26,0; SD=4,3). Seven of them were female (43.8%) and nine were male (56.2%). 7 of them were “first breathers”, and 9 had previous experience with HB (see Table 1).

### Study design

In the present study a single group Pre-post design was used. The variables examined were measured with five psychometric measures: the *Brief Symptom Inventory* (BSI), the *Purpose in Life Test* (PLT), the *Death Anxiety Scale* (DAS), the *Personal Orientation Inventory* (POI) and the *States of Consciousness Questionnaire* (SCQ), and a *Brief Persisting Effects Questionnaire* (BPEQ) in five different moments (Pre measure, after HB, Post1, Post2 and Post3-follow up measures).

Four psychometric measures (BSI, PLT, DAS y POI) were used in three different moments. The first was taken at the beginning of the workshop (Pre measure). The other two measures were taken one month and six months after the workshop (Post1 and Post2 measures). The instruments include measures of levels of distress (BSI), meaning of life (PLT), death anxiety (DAS) and personal orientation (POI).

The fifth psychometric measure, the *States of Consciousness Questionnaire* (SCQ), was used to explore the subjective effects of the participants during their first HB session, focusing specifically to assess mystical or peak experiences. This measure was assessed 1 to 5 hours after the first HB session of the volunteers. The second HB session was not assessed due to time limitations and schedule conflicts with the programed activities of the workshop. Finally, the *Brief Persisting Effects Questionnaire* was used to assess the persisting effects of the HB experience 12 months after the workshop.

The five assessments were distributed in the following way (see Table 2):

**Measure 1: Pre Workshop.** The first assessment was taken the first day of the workshop, before the first HB session took place. Four psychometric instruments were used: BSI, PLT, DAS and POI.

**Measures 2: Subjective effects** of the HB. This assessment was taken during the workshop, 1 to 5 hours after the first HB session. This measure was taken using the *States of Consciousness Questionnaire* (SCQ).

**Measures 3 and 4: Post Workshop.** These assessments were taken one month (Post1) and six months (Post2) after the workshop, using four psychometric instruments: BSI, PLT, DAS and POI.

- **Measure 3: Post1:** assessed one month after the workshop.

- **Measure 4: Post2:** assessed six month after the workshop.

**Measure 5: Follow-up or Post3:** This measure was taken 12 months after the workshop, using the *Brief Persisting Effects Questionnaire* (BPEQ).

### Psychometric measures/materials

The variables examined were measured with six different instruments:

*Brief Symptom Inventory* (BSI). The BSI (Derogatis, 1987, 1993) is a shorter version of the *Symptom Checklist-90-Revised* (SCL-90-R). The BSI is a self-report symptom inventory which measures aspects of psychiatric and psychological distress, and it contains 53 Likert-type items that are scored from 0 to 4. The test provides a measure of 9 primary dimensions of symptoms: Somatization (SOM), Obsessive-Compulsive (O-C), Interpersonal Sensitivity (I-S), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic Anxiety (PHOB), Paranoid Ideation (PAR) and Psychoticism (PSY). The scale also provides three additional global indices of distress: Global Severity Index (GSI), Positive Symptoms Distress Index (PSDI), and Positive Symptoms Total (PST). The GSI

reflects the total score of the test, and provides a measure of the global level of distress. Higher scores indicate higher levels of distress and symptomatology. The BSI and the SCL-90-R measure the same symptom constructs as shown by the high correlations between them, ranging from .92 to .99 (Derogatis, 1993). Internal consistency reliability alpha coefficients for all nine dimensions of the BSI were robust, ranging from .71 to .85. Test-retest reliability was reported to be high, ranging from .68 to .91.

*Purpose in Life Test (PLT).* This questionnaire provides a measure of the extent to which an individual perceives life to be meaningful, based on the theory and concepts of V. Frankl (Crumbaugh, 1968; Crumbaugh and Maholick, 1969; Frankl, 1973). This 20-item questionnaire is rated in a seven point Likert scale, scoring within the range of 20-140. Scores under 90 indicate lack of a meaningful life. Scores within the range of 90-105 are described as an “indifferentiation area”. Scores up to 105 indicate a meaningful life, with goals and a purpose in life.

*Death Anxiety Scale (DAS).* The DAS (Templer, 1970) is a self assessed True-False choice questionnaire consistent of 15 items, and it reflects beliefs, attitudes and concerns about death. The DAS has a range of scores from 0 to 15, and higher scores indicate higher levels of death anxiety. Means of participants generally range from 4.5 to 7.0 (Shell and Zinger, 1984). Several studies have indicated that the DAS has acceptable levels of reliability (Lucas, 1974; McMordie, 1982; Templer, 1970).

*Personal Orientation Inventory (POI).* The POI consists of 150 forced choice pairs of statement requiring comparative value and behavior judgments. This questionnaire is based on Abraham Maslow’s conception of the self-actualizing person, giving information about the positive mental health of individuals (Shostrom, 1964). The POI provides a measure of two basic scales of personal orientation: Inner Directed Support (IDS) and Time Competence (TC). It also provides ten subscales, each measuring a conceptually important element of self-actualizing: Self-Actualizing Value (SAV), Existentiality (EX), Feeling Reactivity (FR), Spontaneity (S), Self-Regard (SR), Self-Acceptance (SA), Nature of Man (NC), Synergy (SY), Acceptance of Aggression (A) and Capacity for Intimate Contact (C). Time Competence (TC) measures the degree to which the test taker is present-oriented, or is oriented towards the past or future. Inner Directed Support (IDS) measures the degree to which actions originate within the self or as a reaction to others (being more independent and self-supportive or more dependent).

*States of Consciousness Questionnaire (SCQ).* The SCQ is a self-assessed 100-item questionnaire which was designed to assess mystical experiences based on the classic descriptive work on mystical experiences and the psychology of religion by Stace (1960). It provides scale scores for each of seven domains of mystical experiences: internal unity (pure awareness; a merging with ultimate reality); external unity (unity of all things; all things are alive; all is one); transcendence of time and space; ineffability and paradoxicality (claim of difficulty in describing the experience in words); sense of sacredness (awe); noetic quality (claim of intuitive knowledge of ultimate reality); and deeply felt positive mood (joy, peace, and love). The data on each scale were expressed as a proportion of the maximum possible score, fixed in 1. Based on prior research (Pahnke, 1969), the criteria for considering a volunteer as having had a “complete” mystical experience were that the scores on each of the following scales had to be at least 0.6: unity (either internal or external, whichever was greater), transcendence of time and space, ineffability and paradoxicality, sense of sacredness, noetic quality, and deeply felt positive mood. Forty-three items on this questionnaire comprised the Pahnke–Richards Mystical Experience Questionnaire (Pahnke, 1969; Richards, 1975).

*Brief Persisting Effects Questionnaire (BPEQ).* The BPEQ was designed based on the *Persisting Effects Questionnaire (PEQ)*, developed by Griffiths et al to collect information about changes in attitudes, moods, behavior, and spiritual experience, measuring also the personal meaning and spiritual significance attributed to the psilocybin experience, and the effects of the experience in the levels of personal wellbeing and life satisfaction (Griffiths, Richards, McCann and Jesse, 2006; Griffiths, Richards, Johnson and Jesse, 2008). The BPEQ included three questions extracted from the PEQ: (1) How personally meaningful was the experience (rated 1= no more than routine, everyday experiences; 2= similar to meaningful experiences that occur on average once or more a week; 3=similar to meaningful experiences that occur on average once a month; 4=similar to meaningful experiences that occur on average once a year; 5=similar to meaningful experiences that occur on average once every 5 years; 6=among the 10 most meaningful experiences of my life; 7=among the 5 most meaningful experiences of my life; and 8=the single most meaningful experience of my life)? (2) Indicate the degree to which the experience was spiritually significant to you (rated 1=not at all, 2=slightly, 3=moderately, 4=very much, 5=among the 5 most spiritually significant experiences



of my life, and 6=the single most spiritually significant experience of my life). (3) Do you believe that the experience and your contemplation of that experience have led to change in your current sense of personal well-being or life satisfaction (rated +3=increased very much, +2=increased moderately, +1=increased slightly, 0=no change, -1=decreased slightly, -2=decreased moderately, and -3=decreased very much)?

## Procedure

The pre-test data were collected the first day of the weeklong workshop. The workshop was held at a human development centre near New York in October 2007, and the researcher stayed at the centre all week to collect the data. Permission to conduct the study was requested from and granted by the organizer and the directors of the workshop. After the introductory talk of the workshop, all the participants aged between 18-35 were invited to participate in the research and to fill out a consent form, a sociodemographic survey and the questionnaires. Participants were told that the study was part of the researcher's PhD thesis in Psychology. Participation in the study was completely voluntary. Written informed consent was obtained prior to the baseline assessments. The questionnaire and survey took around 60-70 minutes to fill out. No compensation was offered for participation in the study. For the post-test assessment, the volunteers were contacted via email, and the questionnaires were sent by mail to the researcher.

## Results

### Data analyses

The data were statistically analysed for the 16 volunteers who completed all the assessments of the BSI, DAS, PLT and POI using the 17.0 version of SPSS.

### Measures assessed four weeks after exposure to the HB workshop.

The post1 measure data were analysed using the paired t test comparison of pre test and post1 test data for the four questionnaires assessed by the volunteers: BSI, PLT, DAS and POI.

### Measures assessed six months after exposure to the HB workshop.

The post2 measure data were analysed using the paired t test comparison of pre test and post1 test data for the four questionnaires assessed by the volunteers: BSI, PLT, DAS and POI.

### Measure of the Subjective effects of the HB assessed during the workshop.

The mean and standard deviation for each of the seven sub dimensions of the SCQ, and the number and percentage of "complete" mystical experiences were calculated.

### Baseline measure

At baseline, the workshop volunteers (N=16) showed a moderately high score in the Global Severity Index (GSI) of the BSI (M= 39.4; SD= 27.2), compared with the adult nonpatient norms of the BSI manual (Derogatis, 1993) (Table 3). The DAS total score (M=4.94; SD= 2.32) was within the average range found by Shell & Zinger (1984) in a review of previous studies. The PLT total score (M=106.8; SD=13.7) indicated that the volunteers had an "uncertain purpose and meaning in life", according to the interpretation criteria of Crumbaugh & Maholick (1969) (Table 4). For the POI, Inner-Directed Support (X=82,87; S.D.=14,9) dimension score was slightly lower than the 50 T score of the American norms of the test, and the Time Competency dimension score (X=14,53; S.D.=3,56) was slightly lower than the 40 T score, indicating a low time competency, and a temporal orientation towards the past and/or the future (Table 5).

**Table 3.** BSI subscales mean and standard deviations at Pre, Post1 and Post2 measures (N=16)

<i>BSI subscales</i>	<i>Pre-test</i>	<i>Post1</i>	<i>Post2</i>
GSI	39.4 (27,2)	36.0 (25,3)	37.9 (23,1)
SOM	3.9 (4.2)	3.3 (4.0)	4.4 (3.8)
O-C	7.7 (5.6)	8.0 (5.0)	7.9 (5.0)
I-S	4.3 (2.7)	3.6 (2.7)	4.2 (3.3)
DEP	4.8 (4.0)	5.0 (3.9)	5.2 (4.0)
ANX	5.4 (4.1)	3.6 (3.3)	4.8 (3.4)
HOS	2.1 (2.0)	3.1 (3.0)	3.3 (2.3)
PHOB	2.1 (2.0)	1.3 (1.9)	2.1 (2.8)
PAR	3.2 (3.0)	3.4 (3.3)	2.2 (2.4)
PSY	2.9 (2.7)	2.1 (2.7)	2.7 (2.4)

BSI: Brief Symptom Inventory. GSI: Global Severity Index; SOM: Somatization; O-C: Obsessive-Compulsive; I-S: Interpersonal-Sensitivity; DEP: Depression, ANX: Anxiety; HOS: Hostility; PHOB: Phobic Anxiety; PAR: Paranoid Ideation; PSY: Psychoticism.

**Table 4.** PLT and DAS mean and standard deviations of the at Pre, Post1 and Post2 measures (N=16)

<i>Questionnaire</i>	<i>Scale</i>	<i>Pre-test</i>	<i>Post1</i>	<i>Post2</i>
PLT	Total score	106.8 (13,65)	106.6 (10,94)	108.0 (12,98)
DAS	Total score	4.94 (2,32)	4.88 (2,19)	4.94 (2,41)

PLT: Purpose in Life Test; DAS: Death Anxiety Scale.

**Table 5.** POI basic scales and subscales mean and standard deviations at Pre, Post1 and Post2 measures (N=16)

<i>POI subscales</i>	<i>Pre-test</i>	<i>Post1</i>	<i>Post2</i>
TC	14.53 (3.56)	15.3 (3.5)	15.8 (3.6)
IDS	82.87 (14.95)	85.4 (10.3)	87.7 (7.3)
SAV	20.1 (2.4)	20,1 (2.4)	2,1 (2.3)
EX	20.9 (4.6)	21.4 (4.5)	23.5 (3.4)
FR	14,3 (3.7)	15.1 (3.0)	15.5 2.2)
S	12.6 (3.1)	12.5 (2.7)	12.7 (2.6)
SR	12.0 (3.2)	12.1 (3.0)	12.5 (2.6)
SA	13.6 (4.2)	14.4 (3.8)	14.3 (3.3)
NC	11.3 (1.7)	12.7 (1.7)	13.0 (2.0)
SY	7.3 (1.2)	7.2 (1.5)	8.0 (0.8)

IDS: Inner Directed Support; TC: Time Competence; SAV: Self-Actualizing Value; EX: Existentiality; FR: Feeling Reactivity; S: Spontaneity; SR: Self-Regard; SA: Self-Acceptance; NC: Nature of Man; SY: Synergy; A: Acceptance of Aggression; C: Capacity for Intimate Contact

**Table 6.** Comparison of pre-test and post1-test mean scores and t-test p value, using raw scores for each measure.

<i>Questionnaire</i>	<i>Scale</i>	<i>Pre-test</i>	<i>Post1</i>	<i>P</i>
BSI	GSI	39.4 (27,2)	36,0 (25,3)	ns
PLT	Total score	106.8 (13,65)	106.6 (10,94)	ns
DAS	Total score	4.94 (2,32)	4.88 (2,19)	ns
POI	TC	14.53 (3,56)	15.27 (3,47)	ns
	IDS	82.87 (14,95)	85.94 (10,33)	ns
	NC	11.3 (1.7)	12.7 (1.7)	<0.01

BSI: Brief Symptom Inventory; GSI: Global Severity Index; PLT: Purpose in Life Test; POI: Personal Orientation Inventory; IDS: Inner Directed Support; TC: Time Competence; EX: Existentiality; ns: non-significant.

**Table 7.** Comparison of pre-test and post1-test mean scores and t-test p value, using raw scores for each measure.

<i>Questionnaire</i>	<i>Scale</i>	<i>Pre-test</i>	<i>Post2</i>	<i>P</i>
BSI	GSI	39.4 (27,2)	37.9 (23.1)	ns
PLT	Total score	106.8 (13,65)	108.0 (12,98)	ns
DAS	Total score	4.94 (2,32)	4.94 (4.1)	ns
POI	TC	14.53 (3,56)	15.80 (3,57)	<0.05
	IDS	82.87 (14,95)	87.67 (7,27)	ns
	EX	20.9 (4,6)	23.5 (3,4)	<0.05
	NC	11.3 (1,7)	13.0 (2,0)	<0.01
	SY	7.3 (1,2)	8.0 (0,8)	<0.05
	AA	14.3 (3,3)	15.3 (2,6)	<0.05

BSI: Brief Symptom Inventory; GSI: Global Severity Index; PLT: Purpose in Life Test; POI: Personal Orientation Inventory; IDS: Inner Directed Support; TC: Time Competence; EX: Existentiality; NC: Nature of Man; SY: Synergy; AA: Acceptance of Aggression; ns: non-significant.

### Post-test measure assessed four weeks after the HB workshop (Post1)

The mean, standard deviation and p values for the Pre-test and Post1 are presented in Table 6. In the Post1 measure (N=16), the participants showed a slight reduction in the GSI of the BSI, compared with the Pre-test scores. The scores of anxiety and phobic anxiety subscales of the BSI also decreased, and the hostility subscale increased. These differences were not statistically significant. The total score of the DAS, and the PLT did not change between the Pre and Post1 measures. The scores of Temporal Competency and Inner Directed Support dimensions of the POI showed an increase between the Pre-test and Post1-test measures. These differences were not statistically significant. The scores of feeling reactivity, self-acceptance, nature of man and capacity for intimate contact subscales of the POI also showed an increase.

The difference in nature of man was statistically significant.

### Post-test measure assessed six months after the HB workshop (post2)

The mean, standard deviation and p values for the Pre-test and the Post2 are presented in Table 7. In the Post2 measure (N=16), the score of the GSI of the

BSI showed a reduction compared with baseline scores, and was slightly higher compared with Post1. The scores of the paranoid ideation subscale of the BSI decreased, and the hostility subscale increased. The total score of the DAS, and the PLT did not change between the Pre and Post2 measures. The scores of Time Competence and Inner Directed Support dimensions of the POI showed an increase between the Pre-test and Post2-test measures. Compared with Post1, the score of Self-direction was slightly lower. The increase in Temporal Competency between Pre and Post2 was statistically significant. The subscales Existentiality, "Nature of Man", "Synergy" and "Acceptance of Aggression" showed statistically significant increases, and Self-Actualizing Value, Feeling Reactivity and Capacity for Intimate Contact subscales scores also increased.

### Measure of the Subjective effects of the HB assessed during the workshop.

Twenty nine of the participants in the study filled out the SCQ after their first HB session during the workshop: twelve men and seventeen women, aged between 19 and 34 years (M=26.7; S.D.=3.94). Fifteen of the volunteers had previous experience with HB, and fourteen of them were "first breathers". Based on prior criteria, 6 of the total group of 29 volunteers had



a “complete” mystical experience during their first HB session during the workshop. Three of the volunteers who had a “complete” mystical experience were “first breathers”, and the other three had previous experience with the HB. The higher scores were found in the ineffability (0.58), intuitive knowledge (0.5) and deeply felt positive mood (0.46) subscales (see Table 8).

**Table 8.** Volunteers ratings (N=29) on the States of Consciousness Questionnaire (SCQ) completed 1 to 5 hours after the first HB session.

Sub-dimension	First HB session (N=29)
Internal Unity	0.41 (0.26)
External Unity	0.33 (0.23)
Transcendence of time and space	0.43 (0.21)
Ineffability	0.58 (0.26)
Sacredness	0.45 (0.27)
Intuitive knowledge	0.5 (0.24)
Deeply felt positive mood	0.46 (0.26)
“Complete” mystical experience	N=6 (20.7%)
“Almost complete” mystical experience	N=1 (3.45%)

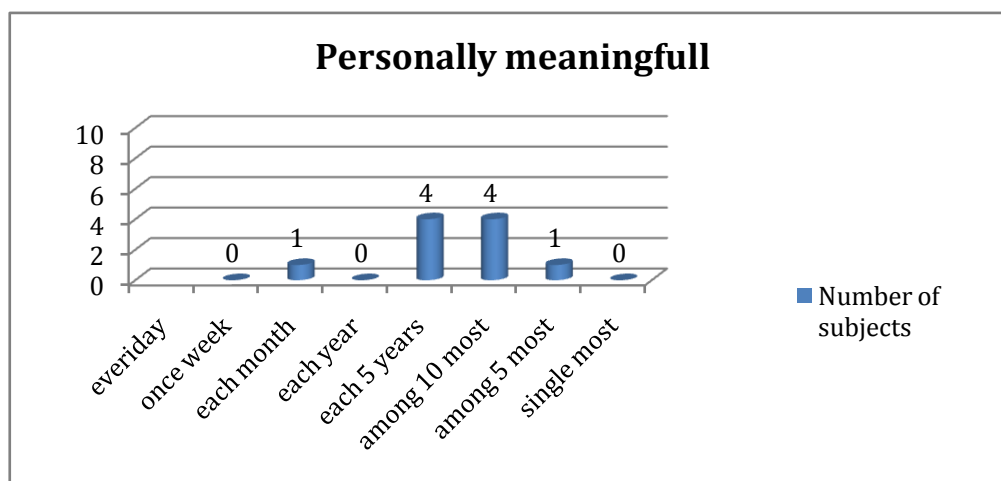
For the 7 subdimensions of the SCQ, data are expressed as a proportion of the maximum possible score, fixed in 1.

### Follow-up measure of the Persistent Effects of the HB assessed 12 months after the HB workshop

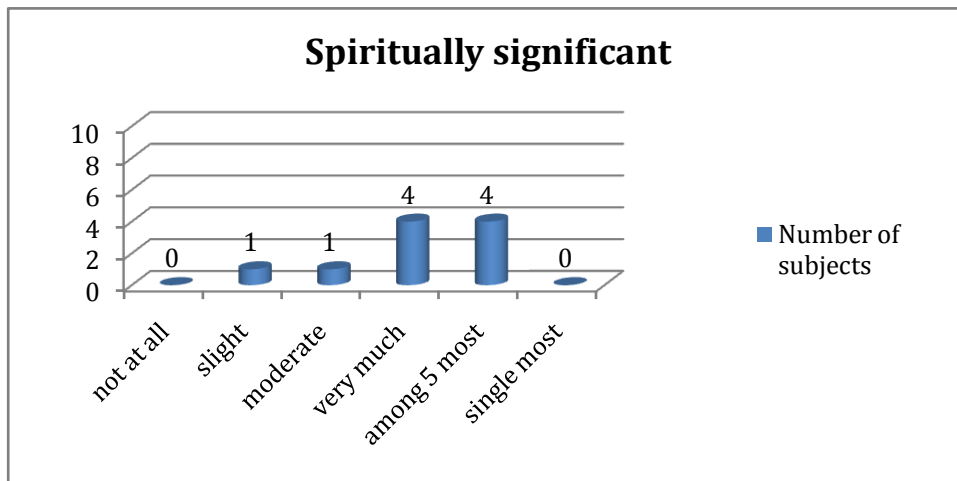
Ten of the participants in the study filled out the follow up brief questionnaire 12 months after the HB workshop. Eight of the volunteers had previous experience with RH, and fourteen of them were “first breathers”. Only two of the volunteers who had a “complete” mystical experience during their first HB session of the workshop filled out the brief questionnaire. It is remarkable that 5 of the volunteers rated the experience during their first HB session to be either among the top five or the top ten most personally meaningful experiences of his or her life. Four of the volunteers rated the HB experience as being among the top five most spiritually significant experiences of his or her life, and another four rated it to be very significant spiritually. Five volunteers rated that the HB experience increased their current sense of personal wellbeing or life satisfaction “very much”, and three of them considered that it was increased “moderately”. No volunteer rated the HB experience as having decreased their sense of wellbeing or life satisfaction.

The Figures 1, 2 and 3 show the number of volunteers who endorsed each of the possible answers to the three questions of the persistent effects brief questionnaire: (1) “how **personally meaningful** was the HB experience?” (2) “Indicate the degree to which the HB experience was **spiritually significant** to you”, and (3) “Do you believe that the HB experience and your contemplation of that experience have led to change in your current sense of **personal wellbeing** or **life satisfaction**?”

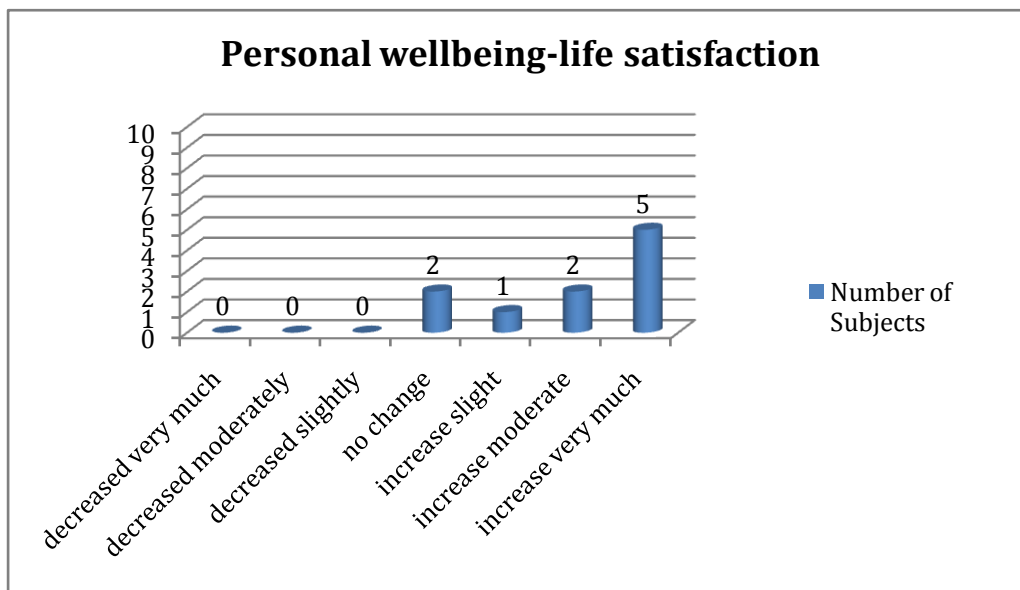
**Figure 1.** Number of volunteers who endorsed each of the eight possible answers to the question “how **personally meaningful** was the HB experience?” on a questionnaire completed 12 months after the HB workshop.



**Figure 2.** Number of volunteers who endorsed each of the six possible answers to the question “Indicate the degree to which the HB experience was **spiritually significant** to you”, on a questionnaire completed 12 months after the HB workshop.



**Figure 3.** Number of volunteers who endorsed each of the seven possible answers to the question “Do you believe that the HB experience and your contemplation of that experience have led to change in your current sense of **personal wellbeing** or **life satisfaction**?” on a questionnaire completed 12 months after the HB workshop.



## Discussion

The purpose of the present study was to explore the effects of HB on levels of distress, meaning of life, death anxiety and personality in a young adult sample in the context of a weeklong workshop; and also to explore the subjective effects of a HB session, and the possible persistent effects of HB on the sense of personal wellbeing and life satisfaction, and the volunteers attribution of personal and spiritual

significance to the HB experience. The overall results of this study provide some initial positive findings regarding the possible therapeutic usefulness of this technique in the context of a weeklong workshop. In the present study, the volunteers showed some significant changes on dependent measures when the baseline and the Post workshop measures are compared, including a significant increase on Time Competence, among other measures of self-actualization. However, significant changes across time

were not found in all the psychometric measures used for the study, including levels of distress, death anxiety, and meaning in life. We also found that HB can occasionally produce mystical-type or peak experiences. 12 months after the workshop, the HB experience is frequently considered as having substantial personal and spiritual significance, and an increase of personal wellbeing and life satisfaction is attributed to it.

Before the workshop, volunteers in the study show moderately high scores on the GSI of the BSI, compared with the adult nonpatient norms of the BSI manual, moderately low scores on the PLT, indicating that the volunteers had a “somewhat uncertain purpose and meaning in life”, according to the interpretation criteria established by Crumbaugh and Maholick (1969), and low scores in Temporal Competency dimension, and self-acceptance, nature of man and acceptance of aggression subscales of the POI. These results indicate that the volunteers in the study had a higher level of distress than the general population, a lack of clear goals and meaning in life, a temporal competency not oriented to the present, a lower self-acceptance and a negative view of the nature of men.

In the Post1 measure, four weeks after the HB workshop, an increase of Temporal Competency and Inner Directed Support was found, and the GSI score decreased slightly. The total score of the DAS, and the PLT did not change. In the Post2 measure, an increase on Temporal Competency and Inner Directed Support scales of the POI was found, and also in scores of feeling reactivity, existentiality, nature of man, acceptance of aggression, and capacity for intimate contact subscales. The GSI score decreased slightly compared with the baseline, and the total score of the DAS, and the PIL did not change.

The progressive increase of the POI scores from the baseline to Post1 and Post2 measures might be suggesting that the effects of the HB workshop manifest gradually over the months following the workshop. However, there may be other reasons to explain this fact.

With regard to levels of distress, a slight reduction of the GSI was found four weeks and six months after the HB workshop. This finding is partially consistent with the research on the topic. Hanratty (2002) also found a significant reduction of the GSI of the BSI test one week and six months after a weeklong HB workshop. The results of Puente’s study (2007, 2013, 2014) showed also a significant reduction in the rating of the GSI one week, one month and six months after an HrcB weekend workshop. However, the reduction found in the present study was slight and not significant.

With regard to meaning of life, we did not find a significant increase of the PLT score four weeks and

six months after the workshop, unlike other studies. In previous research, Binarova (2002) found a significant improvement in the purpose in life (measured by the PLT) in a group of subjects who participated for the first time in a HB session (N=11;  $p<0.05$ ). Puente (2007, 2013, 2014) also found a significant increase in the PLT scores one week, one month and six months after a weekend HrcB workshop in a young adult sample without previous experience with the technique. With regard to death anxiety, we did not find a significant reduction of the DAS score four weeks and six months after the workshop. Previous research on the topic had shown inconsistent findings. Holmes et al (1996) found a significantly greater reduction in the death anxiety (measured by the DAS) in a group who received a six months treatment period, including HB, compared with a therapy only group. But Hanratty (2002) did not find differences between the pre and post measures of the DAS in his study.

With regard to Temporal Competency and Inner Directed Support dimensions of the POI, the scores of both dimensions increased gradually from the baseline to Post1 and Post2, four weeks and six months after the workshop. These results indicate an increase in the degree in which the volunteers shown a personal orientation toward the present, and in the degree of autonomy and self-direction. Puente (2007, 2013, 2014), similar to this study, also found a significant increase in the score of the self-directedness dimension of the TCI-R one week, one month and six months after a HrcB weekend workshop. Holmes et. al (1996) found an increase in self-esteem using the Personality Research Form-E. The increase in self-esteem can be related to the increase in Inner Directed Support found in the present study.

Regarding the subjective effects of volunteers during their first HB session during the workshop, six of the 29 volunteers that filled out the SCQ fulfilled the criteria for having a “complete” mystical experience, the 20.7% of the volunteers that filled out the questionnaire. However, the 29 volunteers only represents 20.7% of the total number of participants of the workshop, and the 59.2% of the participants aged 18 to 35. Thus, these results cannot be generalized to all the participants in the workshop. Nevertheless, it is remarkable that HB occasioned mystical-type or peak experiences in some participants during the workshop, because the present study is the first to measure this kind of experiences using the SCQ during a HB session. It is also remarkable that one of each five volunteers who filled out the SCQ had a complete mystical experience, considering the relative low frequency of this kind of experience in other contexts. Similar outcomes have been found in human research with psychedelic compounds like LSD and psilocybin (Grof, 2001; Griffiths, Richards, McCann and Jesse,

2006; Griffiths, Richards, Johnson and Jesse, 2008; MacLean, Leoutsakos, Johnson and Griffiths 2011; Pahnke, 1963, 1967). These experiences have been related to improvements in several mental health measures (Grof, 2001; Griffiths, Richards, McCann and Jesse, 2006; Griffiths, Richards, Johnson and Jesse, 2008). Another interesting finding is the relative high score in the “deeply felt positive mood” subscale (0.46), which might indicate that the subjective experience during the HB session is remembered and assessed as having an overall positive tone, more than a negative one.

Finally, despite the relative small number of volunteers who filled out the BPEQ 12 months after the workshop (N=10), the answers to the three questions of this questionnaire deserve further comment. Five of the ten volunteers considered the experience during their first HB session in the workshop among the top ten most personally meaningful experiences of his or her life, and four of them considered it among the 5 more spiritually significant experiences of his or her life. Regarding the degree in which the volunteer’s current sense of personal well-being or life satisfaction was affected, five volunteers considered that the HB experience increased it very much. It is also remarkable that none of them considered that the HB experience decrease their current sense of personal well-being or life satisfaction. Similar outcomes have been found recently in a series of studies with the psychedelic compound psilocybin (Griffiths, Richards, McCann and Jesse, 2006; Griffiths, Richards, Johnson and Jesse, 2008).

Despite some initial positive findings suggesting that the use of HB in the context of a weeklong workshop might present therapeutic value for young adults, some limitations can also be pointed out in the present study.

The first limitation of the present research is related with the type of design. A convenience sample was used for the present study, and there was no comparison group. As the study was quasi-experimental, we cannot draw cause-effect statements from it. The second limitation is the small sample size, decreasing the statistical power and increasing the probability of false positive results. Third, the weeklong workshop included different elements besides HB, including daily *Vipassana* meditation and formal talks. Thus, we cannot point out if the effects were specific to the exposure to HB or if they were caused by other factors. Thus, the results cannot be generalized to other contexts or to all the participants of this weeklong workshop, but they do support the idea that HB may contribute to improve psychological health and self-actualization in these specific samples, including an increase in Time Competence, the

flexibility in the application of values (“Existentiality”), the perception of the nature of man as good and constructive (“Nature of Man”), the ability to transcend dichotomies (“Synergy”) and the acceptance of natural aggressivity (“Acceptance of Aggression”).

### Conclusion and future projects

Further research into short and long term effects of HB is needed. There are a number of areas of potential interest that might be examined in future research, including the assessment of physiological and neurophysiologic variables, and the use of qualitative methodology. We also believe that the setting, the context surrounding the experience, is very important in relation to the effects produced by this non-drug way of accessing non-ordinary states of consciousness. Thus, future research examining the degree to which these results are specific to the context is needed. The development of similar studies in other contexts where HB and other similar hyperventilation procedures are used could be very fruitful. Finally, in order to investigate the usefulness of HB, beyond what appears to be some initial positive results found in the present study, we consider it is important to replicate these results in a larger, well-controlled study. A placebo-controlled, randomized study assessing the efficacy of HB in patient populations, for the treatment of a particular condition, could be designed and carried out as the next step.

Despite its limitations, and recognizing the exploratory nature of this pilot study, our results suggest that the use of HB in the therapeutic context of a weeklong workshop may contribute to improve psychological health and self-actualization. Additionally, the present study showed that HB occasioned mystical-type or peak experiences in some of the volunteers in the context of a weeklong workshop, and that the HB experience was evaluated by volunteers as having substantial and sustained personal meaning and spiritual significance, which also attributed to the experience an increase of personal wellbeing and life satisfaction. These preliminary results give support for further research on the possible therapeutic use of HB, as well as to the study of the subjective effects and persisting effects occasioned by the HB experience.

### Acknowledgements

This research was supported by UAB-PIF grant from the UAB and a grant from the Association of Holotropic Breathwork International. We thank Oliver Williams for data management; Stan Grof, for discussions about the study design; Stan Grof and Jack Kornfield, for allowing us to collect the data during the “Insight and Opening” workshop; Bill Richards and Ronald Griffiths, for permission to use the SCQ and the items of the PEQ.

### References

- Bass, C. (1997). Hyperventilation syndrome: A chimera?. *Journal Psychosomatic Research*, 42: 421-426.
- Binarová, D. (2003). The effect of Holotropic Breathwork on Personality. *Ceska a Slovenska Psychiatrie*, 99(8), 410-414.
- Brewerton, T. D., Eyerman, J. E., Cappetta, P., & Mithoefer, M. C. (2012). Long-term abstinence following Holotropic Breathwork as adjunctive treatment of substance use disorders and related psychiatric comorbidity. *International Journal of Mental Health and Addiction*, 10 (3): 453-459. doi: 10.1007/s11469-011-9352-3.
- Crumbaugh, J.C. (1968). Cross-validation of Purpose In Life Test based on Frankl's concepts. *J. Indiv. Psychology*, 24, 74-81.
- Crumbaugh, J.C. and Maholick, L.T. (1969). *Manual of instructions for the Purpose In Life test*. Saratoga: Viktor Frankl Institute for Logotherapy.
- Derogatis, L. and Spencer. P. (1987). *Brief Symptom Inventory*. Towson, MD: Clinical Psychometric Research.
- Derogatis, L. (1993). *Brief Symptom Inventory (BSI). Administration, Scoring and Procedures Manual. Fourth Edition*. Minneapolis: Pearson.
- Desikachar (1985). *Yoga: conversaciones sobre teoría y práctica*. Barcelona: Hogar del Libro.
- Eyerman, J. (2013). A clinical report of Holotropic Breathwork in 11,000 psychiatric inpatients in a community hospital setting. *MAPS Bulletin Special Edition*, 23(1): 24-27.
- Griffiths, R. R., Richards, W. A., McCann, U., & Jesse, R. (2006). *Psilocybin can occasion mystical-type experiences having substantial and sustained personal meaning and spiritual significance*. *Psychopharmacology*, 187: 268-283.
- Griffiths, R. R., Richards, W. A., Johnson, M. W., & Jesse, R. (2008). Mystical-type experiences occasioned by psilocybin mediate the attribution of personal meaning and spiritual significance 14 months later. *Journal of Psychopharmacology*, 22 (6): 621-632.
- Grof, S. (1972). Varieties of Transpersonal experiences: Observations from LSD psychotherapy. *Journal of Transpersonal Psychology*, 4(2): 7-14.
- Grof, S. (1973). Theoretical and empirical basis of transpersonal psychology and psychotherapy: Observations from LSD research. *Journal of Transpersonal Psychology*, 5(1): 15-53.
- Grof, S. (1975). *Realms of the human unconscious: Observations from LSD research*. New York: Viking Press.
- Grof, S. (1980). *LSD psychotherapy*. Pomona Ca: Hunter House.
- Grof, S. (1988). *The adventure of self Discovery*. Albany, NY: State University of New York Press.
- Grof, S. (2000). *Psychology of the Future*. Albany, NY: State University of New York Press.
- Grof, S and Grof, C (2010). *Holotropic Breathwork: a new approach to self-exploration and therapy*. New York: State University of New York (SUNY) Press.
- Frankl, V. (1973). *Psychotherapy and existentialism: selected papers on logotherapy*. Harmondsworth: Penguin Books.
- Hanratty, P.M. (2002). Predicting the outcome of holotropic breathwork using the high-risk model of threat perception. *Dissertation Abstracts International: Section B: The Sciences & Engineering*, 63(1-B), 527.



- Holmes, S. W. (1993). *An Examination of the Comparative Effectiveness of Experientially and Verbally Oriented Psychotherapy in the Amelioration of Client-Identified Presenting Problems*. Ph.D. dissertation. Proquest Dissertations and Theses. Section 0079, Part 0622 257 pages; United States—Georgia: Georgia State University. Publication Number: AAT 9409408.
- Holmes, S.W., Morris, R., Clance, P.R. and Putney, R.T. (1996). Holotropic breathwork: An experiential approach to psychotherapy. *Psychotherapy: Theory, Research, Practice, Training*, 33(1), 114-120.
- Lowen, A. (1976). *Bioenergetics*. New York: Penguin Books.
- Lucas, R. A. (1974). A comparative study of measures of general anxiety and death anxiety among three medical groups, including patient and wife. *Omega*, 5, 233-243.
- MacLean, K. A., Leoutsakos, JM. S., Johnson, M. W., and Griffiths, R. (2012). Factor analysis of the Mystical Experience Questionnaire: a study of experiences occasioned by the hallucinogen psilocybin. *Journal of the Scientific Study of Religion*, 51(4): 721-737.
- McMordie, W. R. (1982). Concurrent validity of Templer and Templer/McMordie death anxiety scales. *Psychological Reports*, 51, 265-266.
- Meuret, A.E., Ritz, T., Wilhelm, F.H., Roth, and W.T (2005). Voluntary hyperventilation in the treatment of panic disorder: Functions of hyperventilation, their implications for breathing training, and recommendations for standardization. *Clinical Psychology Review*, 25, 285–306.
- Morgan, W.P. (1983). Hyperventilation syndrome: A review. *American Industrial Hygiene Association Journal*, 44: 685–689.
- Orr, L. and Ray, S. (1983). *Rebirthing in the New Age*. Berkeley: Celestial Arts.
- Pahnke, W. N. (1969). Psychedelic drugs and mystical experience. *International Psychiatry in Clinical Practice* (5):149–162.
- Pahnke, W. N., Kurland, A. A., Unger, S., Savage, C., and Grof, S. (1970). The experimental use of psychedelic (LSD) psychotherapy. *Journal of the American Medical Association*, 212(11): 1856-1863.
- Pressman, T.E. (1993). *The psychological and spiritual effects of Stanislaw Grof's Holotropic Breathwork technique: An exploratory study*. San Francisco, CA: Saybrook Institute; unpublished dissertation.
- Puente, I. (2007). *Complejidad y Psicología Transpersonal: caos y autoorganización en psicoterapia*. Barcelona: Universidad Autónoma de Barcelona; unpublished dissertation.
- Puente, I. (2013). A quasi-experimental study of holorenic breathwork in a psychotherapeutical context: preliminary results. *Journal of Transpersonal Research*, 5 (2): 7-18.
- Puente, I. (2014). *Complejidad y Psicología Transpersonal: caos y autoorganización en psicoterapia*. PhD dissertation. Barcelona: Universidad Autónoma de Barcelona.
- Rhinewine, J. and Williams, O. (2007). Holotropic Breathwork: the potential role of a prolonged, voluntary hyperventilation procedure as adjunct to psychotherapy. *Journal of Alternative and Complementary Medicine*, 13 (7), 1-6.
- Richards, W. A. (1975). *Counselling, peak experiences and the human encounter with death: An empirical study of the efficacy of DPT assisted counselling in enhancing the quality of life of persons with terminal cancer and their closest family members*. Ph.D. dissertation. Whashington DC: Catholic University of America.
- Schell, B., & Zinger, T. (1984). Death anxiety scale means and standard deviations for Ontario undergraduates and funeral directors. *Psychological Reports*, 54, 439-446.
- Shostrom, E. L. (1964). An inventory for the measurement of self-actualization. *Educ Psychol. Meas*, 24: 207-218.
- Stace, W. T. (1960). *Mysticism and philosophy*. London: Ed McMillan.
- Templer, D.I. (1970). The construction and validation of a death anxiety scale. *J. General Psychology*, 82, 165-177.

Zvolensky, M.J. and Eifert, G.H. (2001). A review of psychological factors/ processes affecting anxious responding during voluntary hyperventilation and inhalations of carbon dioxide-enriched air. *Clinical Psychology Review*, 21: 375–400.

**\*Iker Puente** is a psychologist and researcher from the Autonomous University of Barcelona (UAB). He holds a degree in Psychology from the University of Deusto and a degree in Anthropology from the UAB. He recently obtained his PhD degree in Psychology at the UAB with his dissertation “Complexity and Transpersonal Psychology: chaos, self-organization and peak experiences in psychotherapy”, exploring the short and medium term effects of two breathwork techniques, Holotropic Breathwork (HB) and Holorenic Breathwork (HrnB), and the subjective effects of HB. He is assistant editor of the Journal of Transpersonal Research. He has been trained in Gestalt Therapy at the Institut Gestalt in Barcelona, in Altered States of Consciousness at the Society of Etnopsychology and Cognitive Studies, and in Holotropic Breathwork and Transpersonal Psychology at the Grof Transpersonal Training. He has been visiting scholar at the California Institute of Integral Studies (CIIS), coordinator of the psychedelic emergency service at BOOM festival, and has teaching experience in the field of transpersonal psychology.

Email: [ikerpuente@hotmail.com](mailto:ikerpuente@hotmail.com)