Breathing Interventions in Psychology: An Overview of the Theoretical and Empirical Literature

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Abstract
Psychologists of diverse orientations have utilized breathing interventions for a wide range of purposes and in a myriad of contexts. In order to provide therapists with more objective knowledge on breathing interventions, this paper presents an overview of both the theoretical and the empirical literature related to the breath. The psychological applications of breathing are present in three modalities: affect induction, affect reduction, and awareness. Theories and techniques involving affect induction were pioneered by Wilhelm Reich and his students, and are outlined in this review for consideration. Affect reduction is shown to have a much wider range of applications, many developed from ancient yogic techniques found to have contemporary validity in the treatment of panic disorders and hyperventilation. Lastly, techniques involving awareness of breath are investigated from the theoretical perspectives of Gestalt Therapy and Mindfulness Meditation practice. A summary and discussion is provided focusing on the practicality and safety components of awareness-based breathing interventions.

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BREATHING INTERVENTIONS IN PSYCHOLOGY:
AN OVERVIEW OF THE
THEORETICAL AND EMPIRICAL LITERATURE

A THESIS
SUBMITTED TO THE FACULTY
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Psychologists of diverse orientations have utilized breathing interventions for a wide range of purposes and in a myriad of contexts. In order to provide therapists with more objective knowledge on breathing interventions, this paper presents an overview of both the theoretical and the empirical literature related to the breath. The psychological applications of breathing are present in three modalities: affect induction, affect reduction, and awareness. Theories and techniques involving affect induction were pioneered by Wilhelm Reich and his students, and are outlined in this review for consideration. Affect reduction is shown to have a much wider range of applications, many developed from ancient yogic techniques found to have contemporary validity in the treatment of panic disorders and hyperventilation. Lastly, techniques involving awareness of breath are investigated from the theoretical perspectives of Gestalt Therapy and Mindfulness Meditation practice. A summary and discussion is provided focusing on the practicality and safety components of awareness-based breathing interventions.
INTRODUCTION

Are breathing interventions incorporated into clinical psychology; and what are the most effective ways to utilize breathing interventions as part of a psychotherapy approach? To begin to answer this question, it is important to understand the complex and multidimensional role that breathing plays within human life. Life begins with an inhalation and ends with a final exhalation. From the moment we are born until the moment we die, we continuously breathe. Our lives are inexorably connected to this rhythm on levels physiological and emotional, making breathing a unique and vital area of investigation.

On a basic physiological level, breathing provides the oxygen (O\textsubscript{2}) necessary for the function of all the cells in the body and, conversely, expels the carbon dioxide (CO\textsubscript{2}) produced by metabolic functions. In humans, the respiratory system is designed to provide O\textsubscript{2} and remove CO\textsubscript{2}, quickly and efficiently, naturally adjusting to our level of activity. It is in this way that breathing operates continuously and often outside our awareness. However, breathing is not confined only to the unconscious functions of human physiology.

Breathing uniquely bridges the autonomic and the voluntary nervous systems of the body. It dually functions both instinctively and with conscious control. We experience this noncompulsory ability when we control our breathing patterns, speak, hold our breath, blow out candles, and in many other activities. This elective control over an otherwise autonomic system has led many investigators of human psychology to examine how breathing illuminates the dynamic connection between the mind and the
body. This connection is highlighted by the pronounced role breathing plays in our emotional experience.

The unconscious rhythm of our breathing fluctuates considerably alongside our physical activities and our emotional states. Typically, when we become relaxed our breathing slows and deepens. The opposite is true in that when we feel upset, angry or scared, the breath increases or becomes shallow. When anxious, we tend to hold our breath and speak at the end of the in-breath in a high-pitched voice. Depressed people tend to sigh and speak at the end of expiration in a low-toned voice. A child having a temper-tantrum might hold his or her breath until blue in the face. Like a mirror, breathing constantly reflects our mental state and our somatic experience, offering a telling glimpse into the mind, the body, and our fundamental emotional experience.

In the last century, the role of the breath in therapy has been given committed attention in the field of psychology. Freud, often considered the father of psychology, was astute to note in his clinical observations the importance of breathing in neurotic patients (1905). His student Wilhelm Reich elaborated upon this, investigating the breath as a means to access repressed emotions locked away in the muscles and structure of the body. Breathing has also become an element of the modern cognitive behavioral therapy (CBT) movement in the treatment of panic disorders. As well, CBT researchers have utilized controlled breathing as a method to counteract and educate patients about hyperventilation syndrome. Finally, we see breathing at the forefront of mindfulness-based treatments and embedded in the philosophy and practice of Gestalt therapy.

Given the breadth of breathing interventions utilized in psychology there is a marked lack of a comprehensive and synoptic view of the subject. This need for
understanding how breathing can be effectively used is highlighted by our increased understanding of how deeply the mind and the body are connected. Researchers in psychology and other health professions have consistently shown that changes in our physiology dramatically effect our emotional functioning (e.g. the effects of exercise on depression: Bodin & Martinsen, 2004; Craft & Landers, 1998; Faulkner, Biddle, & Stuart, 2004; Harris, Cronkite, & Moe, 2006; Martinsen, 2005). Interventions involving breathing offer a unique method of engaging with the body on a physiological level, potentially accessing a powerful and elemental treatment modality.

In sum, the reasons for seriously attending to breathing interventions in modern clinical psychology are abundant. Breathing is a natural function available to all humans, accessible at all times, and ultimately cost free. The fact that breathing can be employed at any time allows treatment to be applied at the moment of need rather than limited by the constraints inherent in direct therapist care. Moreover, breathing, unlike medication, has no side effects, nor potential for addiction. Furthermore, the inherent nature of breathing makes it an intervention that may provide effective treatment for diverse cultural and socioeconomic populations.
STATEMENT OF THE PROBLEM

Despite a long history of research and application related to breathing interventions within psychology, little organization and communication has occurred across the wide range of clinical orientations and methodologies. Many breathing interventions are formulated from disparate orientations that differ significantly in therapeutic approach and ideology. Information sharing among clinicians regarding interventions that utilize breathing has been inhibited by these differences. A theoretical framework is needed to organize and describe the utility of breathing interventions relative to one another and across differing orientations.
PURPOSE OF THE STUDY

The purpose of this study is to clarify and accurately identify therapeutic breathing techniques and examine their empirical validity. A theoretical structure is proposed in order to organize and conceptualize these methods, thus providing an accessible clinical model that shares information regarding breathing interventions amongst the wide range of therapeutic orientations.

The hypothesis of this study is that breathing interventions can be organized into three significantly different modalities: affect induction, affect reduction, and awareness. Although differences exist in the theoretical and philosophical etiologies of specific breathing interventions, the organization of breathing interventions into these categories will provide a structure for this investigation and a language that transcends differing clinical approaches.

Interventions categorized as affect inductive are breathing techniques used specifically to deepen emotional experience and bring a patient into contact with affect that is usually conceptualized as being ‘repressed.’ Affect reductive breathing interventions consist predominantly of techniques that work to engage the natural relaxation properties of the body and diminish symptoms of anxiety. Lastly, breathing interventions categorized as “focusing on awareness” are distinguished as specifically lacking the intention of changing a client’s respiration or affect from that of their present state. These interventions engage clients’ breathing as a tool to connect with bodily and emotional experiences in the present moment.
METHODS

A literature review was selected as the method of inquiry. To test the hypotheses that interventions could be organized by affect induction, affect reduction, and awareness the literature of Wilhelm Reich, Yogic breathing, Cognitive-Behavioral Therapy (CBT), Mindfulness based treatments, and Gestalt Therapy was reviewed. Reich and his students were investigated due to the seminal nature of his work on the subject of somatic psychology and breathing. This literature review was intentionally limited in its scope to avoid redundancies inherent in describing the numerous ‘neo-Reichian’ therapies, as many of these techniques fail to differentiate themselves dramatically from Reich’s work. Yogic breathing techniques were included in the research due to the abundance of studies involving therapeutic yogic breathing and the fact that yogic breathing predates all known Western breathing techniques.

Cognitive Behavioral breathing interventions were investigated due to the significant level of empirical validity and sheer number of studies reported utilizing these methods. Mindfulness studies were included in this investigation because they place significant weight on the importance of breathing as a therapeutic intervention and offer a unique perspective on the utility of breathing to increase awareness. Gestalt therapy was investigated because it offered a distinctly different way of including breathing in clinical work. Excluded were interventions involving hyperventilation to attain ‘rebirthing’ experiences due to the lack of scientific scrutiny and relationship to modern psychology (e.g. Grof).
REVIEW OF THE LITERATURE

Affect Induction

As noted earlier, affect inducing breathing techniques are used primarily to help patients make contact with emotions that are thought to be restricted or repressed. These breathing techniques can be traced back to the work of Austrian psychoanalyst Wilhelm Reich. Reich is recognized as pioneering a psychotherapeutic approach that concentrated upon both the psychic and somatic aspects of a patient's character. As he began his clinical work, Reich noticed that his patients repressed their emotions through the maintenance of chronic muscular tension, posture, and breathing (Reich, 1949, 1974). He called these patterns of tension muscular armoring and conceptualized them to be the physical means by which patients bound and contained anxiety. Reich viewed muscular armoring to be functionally identical to the patient's character resistances, in the sense that both were usually unconscious and served as defenses to ward off anxiety (Reich, 1942). Reich's view of the source and manifestation of these structures changed after his discovery of 'orgone' or life energy but for the purposes of this paper the discussion will be limited strictly to his theories related to breathing.

Reich, over a period of time, began to orient his therapeutic technique to work more directly with patterns of muscular armoring. He began to call his therapy character analytic vegetotherapy, to distinguish it from the talk approaches of his colleagues, and to indicate that he was working with the relationship between the vegetative (autonomic) nervous system and emotional repression. In Reich's work, the patient would be partially unclothed and directly facing the therapist. This allowed Reich to observe both the verbal and autonomic psychological responses of the patient, both of which he found to be of
equal importance. By including the physiological aspects of a patient’s presentation into his analysis, he found that chronic patterns of muscle tension were consistently associated with breathing disturbances. These discoveries lead Reich to the conclusion that limitations associated with full inhale and/or exhale were a central feature of neurotic repression. Explaining this point, Reich (1942) noted that,

There is no neurotic individual who is capable of exhaling in one breath, deeply and evenly. The patients have developed all conceivable practices which prevent deep expiration. They exhale “jerkily”, or, as soon as the air is let out, they quickly bring their chest back to in the inspiratory position. (p. 296)

The importance of breathing is paramount in Reich’s work. Reich proposed that the inability of neurotics to inhale or exhale fully was a result of the patient’s maintenance of a continued state of anxiety that formed in childhood. He theorized that due to long-term exposure to stressors, human beings become conditioned to suppress or distort natural feelings. Reich believed that these conditions of chronic stress are stored in the body as muscular armoring, thereby restricting the natural rhythm of respiration and suppressing fluid emotional expression.

This raises the question of why does breathing have such a significant role in repressing affect? According to Reich’s original thinking, restrictions in breathing limit the amount of oxygen that can be absorbed by the body and thereby reduce the subsequent amount of energy produced by the organism. For Reich, this led to a reduction of autonomic function and hence, decreased stored anxiety. Clarifying this point, Reich stated (1942), “The inhibition of respiration, as it is found regularly in neurotics, has, biologically speaking, the function of reducing the production of energy in the organism, and thus, of reducing the production of anxiety” (p.276). Reich also
speculated that since all extreme emotional response requires an increase or change from resting respiration, that restricted breathing functions to reducing affect response. By restricting breathing, individuals functionally limit their ability to feel the intensity of their emotions.

Alexander Lowen, a student of Reich’s from 1940 to 1953 and developer of “bioenergetics”, continued Reich’s thinking on the role of inhibited respiration functioning as a means of affect reduction. Lowen (1965) writes that people,

... are afraid to feel their sadness, their anger and their fear. As children, they held their breath to stop crying, they draw back their shoulders and tighten their chests to contain their anger, and they constricted their throats to prevent screaming. The effect of each of these maneuvers is to limit and reduce respiration. Conversely, the suppression of any feeling results in some inhibition of respiration. (p. 2)

And again,

The most important reason for diminished respiration is the need to cut off unpleasant body sensations. (1967, p. 147)

As Reich’s treatments evolved they began to incorporate massage and bodily manipulation in order to counteract dysfunctional breathing. Typically, during these sessions clients would experience a release of ‘repressed’ emotions, usually in the form of crying. This release was followed by a period of more rhythmic and deep breathing. Sharaf (1983) provides a description:

the patient is asked to lie down and to breathe. Then attention is called to a variety of ways in which he or she ‘resists’ natural inspiration and expiration. He may be told that he breathes in fully, but lets little air out; or that his chest does not move; or that he huffs and puffs unnaturally....When the patient’s breathing was shallow or forced, Reich would make use of touch to stimulate an emotional flow and, with it fuller respiration. After deep sobbing, especially, the patient would breathe more freely. (p. 236)
Sharaf (1983) makes two significant points in his description. First, when working with clients Reich conceptualized breathing resistance to function similar to character resistance in classical psychoanalysis. Reich, trained as an analyst, viewed resistance, both character and somatic, as underlying unconscious defenses mechanisms needing to be deconstructed and released by the analyst. This is important because it highlights the intention of this approach to induce affect. As noted earlier, Reich conceptualized resistance in breathing as blockage and storage of energy that needed to be freed to enable the expression of emotion. The latter part of Sharaf’s description depicts Reich using touch to stimulate fuller breathing and evoking affect release. This release of stored affect was central to Reich’s work and was accessed by both physical manipulation and coaching of specific breathing techniques.

Lowen (1965) expounded upon Reich's work by developing certain exercises and positions designed to help patients deepen their respiration. One of the central techniques described by Lowen is known as bioenergetic breathing. This technique entailed fast and deep breathing that emphasized full inhalation. He noted that the breathing should be fluid with no pause at the top or the bottom of the breath. Bioenergetic breathing is done with an open mouth and throat without intentional control of air moment. In a typical bioenergetic breathing session, a patient might work up to a vigorous pace of breathing in the space of a minute or two, continue for five to ten minutes, and then wind down again. Affect induction is expected as an outcome of this exercise and some therapists will have pillows available for cathartic expression (e.g. hitting or punching).

Lowen (1988) summarizes his method as such,

The basic technique I use to help a person unblock his crying is to mobilize his breathing and his voice. There are several ways this can be done, but in treating people
who have hardened themselves. It is helpful to use a bioenergetic stool. The stool measures 24 inches high... The person lies back on the stool, his arms stretched above his head toward a chair... As we have seen, people who hold in their feelings hold in their breath. Lying over the stool promotes breathing out and so favors "letting go". If one breathes out, with a deep abdominal expiration, the suppressed sadness cannot be held and will erupt spontaneously... Whatever the form resistance takes, I encourage the person to let go as much as possible and to deliberately make crying sounds. (p. 192)

One of the central techniques of affect induction in the Reichian and Lowenian style is articulated in this description. As Lowen notes, by encouraging a client to make the deliberate sounds and breathing associated with the suspected repressed affect, a genuine emotional release is encourage and often evoked.

Affect induction techniques bare some significant challenges and caveats. First, the therapist must have sufficient training in the recognition of breathing restrictions as neurotic muscular armoring rather then the many possible medical problems associated with breathing limitations (e.g. asthma). Improper diagnosis could pose considerable dangers to the client’s physical health either through the failure of the therapist to prescribe appropriate medical treatment or the potential exasperation of existing conditions through breathing interventions.

Further more, as nearly all strong emotions (crying, anger, fear, and pleasure) involve increased breathing, the potential to instigate affect induction that might be overwhelming to the client is a significant concern. As noted previously, in Reich’s work the therapist seeks to deepen breathing to the point where it engages repressed affect. In doing so, the therapist needs to be sensitive to the natural rhythms of the breathing cycle and to the thresholds of anxiety in the client. Inexperienced therapists trying to provoke a patient to deeper breathing can easily induce a hyperventilation crisis and not recognized
it as such. Skill is required in this work since a patient with chronically reduced breathing may easily experience hyperventilation as a response to the therapeutic situation.

As some of the techniques involving affect induction involve breathing and touch concurrently, the therapist must be skilled at recognizing the risks inherent in touching. Proper training and forethought by the therapist is required to avoid the obvious risk of touch being misinterpreted. Further more, the risks associated with touch may be increased due to the heightened sensitivity produced by increased respiration.

Additionally, the empirical validity associated with affect inductive therapies is non-existent. These approaches are difficult to quantify because they work, sometimes over years, to change the inherent character structure of the patient. More research is needed to establish the empirical validity of these types of affective inductive therapies.

Affect Reduction

The reasons that therapists attempt to induce affect reduction with clients are numerous. Many anxiety disorders in the DSM-VI TR (American Psychiatric Association, 2000) are listed as involving increased physiological symptoms of stress (e.g. palpitations, sweating, trembling, sensations of shortness of breath, and feelings of choking), many of which are experienced as debilitating for the sufferer. While much research has been devoted to the investigation of the pharmacological treatments of these anxiety related symptoms (Sheehan, Ballenger, & Jacobson, 1980; Owen & Tyrer, 1983; Zitrin, Klein, Woerner, & Ross, 1983) significantly less research has been devoted to developing treatments that rely on behavioral methods, especially those involving breathing. There are important practical and ethical reasons why breathing treatments may be preferable to treatments involving the medications. First, benzodiazepines have
the potential to create tolerance and dependence over time (Owen & Tyler, 1983).
Second, the use of medication potentially removes the locus of control from the patient to
the doctor. Treatment techniques that are aimed at enhancing the patient’s sense of
mastery and control over unpredictable and unpleasant physical and mental sensations are
more likely to have lasting benefit (Petersen, Maier, & Seligman, 1995). Two areas
supported by empirical literature have been identified as using affect reducing breathing
interventions: yogic breathing (pranayama) and breathing retraining. I will begin with
yoga, as its practice predates and has undoubtedly, though not overtly, influenced later
behavioral techniques.

Yogic Breathing

Originally a spiritual practice in India, yoga has become widely popular in the
west primarily as a physical practice. Yoga, directly translated from Sanskrit means
“union” to express the act of unifying the mind and the body in harmony. In yoga, as well
as many other Eastern practices and philosophies, the Cartesian dichotomy of mind and
body has never been held as true. Yoga practitioners have used breathing techniques to
enhance many things that have been under the rubric of the mind, such as mood,
attention, mental focus, and stress tolerance for thousands of years (Iyengar, 1989).
Georg Feurstein (1996), a prominent yoga scholar, propounds the importance of breath in
yoga practice by stating, “The heart of Hatha-yoga (physical yoga) is unquestionably
breath control (pranayama), and a variety of techniques given to manipulate the body’s
energy (prana) via the breath” (p. 26). Practitioners of yoga advocate that breath control
is equal to mental control and that through proper regulation of breath the yogi can also
influence the nervous system and emotional well being (Iyengar, 1989).
It is important to note the significant differences between affect inducing Reichian type breathing techniques and affect reducing yogic breathing techniques. Morton Herskowitz (2001), a student of Reich's, aptly details these differences,

They are quite different, both in mechanics and in effect. Yoga breathing entails inspiring deeply and exhaling a long, controlled breath, and its object is control. The breathing in (Reichian) therapy entails moderately deep inspiration with uncontrolled expiration; the emphasis is on the complete and uninhibited release of the inspired air. Its object is—the exposure to freedom and the abandonment of control mechanisms—the opposite of the yogic object. (p. 56)

Herkowitz (2001) describes the fundamental dissimilarity between these practices as being loosening of breath control and release of affect for Reichian techniques and increased control and affect reduction for yogic techniques. Yogic breathing methods characteristically involve the practice and refinement of specific patterns and styles of respiration that work to focus and calm the practitioner.

The central yogic breathing patterns are described in Brown & Gerbarg’s (2005a, 2005b) comprehensive review of the effectiveness of yoga techniques in clinical settings. The first breathing technique, Ujjayi or “Victorious Breath” is created by the slight contraction of the laryngeal muscles and partial closure of the glottis. This slow breath technique, usually 2 to 4 breaths per minute, increases airway resistance during inspiration and expiration thereby controlling airflow to the desired pattern. This technique also often entails brief apnea at the end and beginning of each breath. The researchers reported that the experience of this breathing technique lead to a sense of physical and mental calmness with an element alertness. The second technique, called Bhastrika or “Bellows Breath”, requires that air is rapidly inhaled and forcefully exhaled at a rate of 30 breaths per minute. The authors report that this breathing engenders
excitation followed by sense of equanimity. The third breathing pattern discussed involved the sound “Om” chanted three times with very prolonged expiration. Lastly, Sudarshan Kriya or “Proper Vision by Purifying Action” was described as an advanced form of cyclical breathing that varied from slow, medium, to fast. They did not report the subjective experience of the final breathing techniques. It is important to note that all of the breathing techniques described were reported to induce a feeling of relaxation and calm.

The function of this calming effect is explored in a seminal literature review by Benson, Beary, & Carol (1974). Their review sought to explore the hypothesis that a central nervous system reaction, the “relaxation response”, underlies altered states of consciousness and functions to relax practitioners. As per the parameters of this review, I will focus only on the measured outcomes for respiration changes and not the many other parameters reported in the review. Benson et al. reported that of nine studies reviewing respiratory changes associated with participating in either transcendental meditation, autogenic training, hypnosis, zen and yoga, contention, or sentic cycles all showed a significant decrease in respiratory rates and concurrent deepened states of relaxation. The authors theorized that the relaxation response is a hypothalamic function resulting in a general decrease in the sympathetic nervous system and an increase in the parasympathetic nervous system. They note that the relaxation response is opposite of the “fight or flight” response which works to elevate respiratory rates.

To further study the ability of yogic breathing to produce beneficial changes in mood and emotional state Harvey (1983) compared yogic breathing to a meditation control group and a psychology class control group. Using a mood states
profile measure as a dependent variable, Harvey found that yogic breathing exercises created a significant improvement in mood, specifically in the areas of the mood profile that were more physiological in nature: vigor-activity, fatigue-inertia, and tension-anxiety. The author hypothesized that the yogic breathing techniques were effective in accord with the yogic literature as a means of creating an energized relaxed state. Due to the small sample size and lack of random assignment the study lacked true empirical validity but does offer preliminary evidence that yogic breathing can influence mood.

Stanescu, Nemery, Veriter, and Marechal (1981) studied breathing patterns and ventilatory response to CO$_2$ in subjects practicing Hatha-yoga, and a control matched for age, sex, and height. The breathing techniques described by this study involved inhaling and exhaling to capacity accompanied by apnea at the end of inspiration and expiration (i.e. Ujjayi pranayama). The yoga subjects showed lower respiratory rate and minute volume but higher tidal volume and end-tidal pCO$_2$ than controls. All the reported differences were significant, and the ventilatory response to CO$_2$ was also significantly lower in the yoga group. The authors speculated that particular patterns of breathing repeated almost daily for years could become automatic by the process of conditioning or learning.

In another study of the utility of yogic breathing techniques, Cappo & Homes (1983), researched whether slowing and altering respiratory patterns is an effective method of reducing physiological and psychological arousal. The college-aged subjects (N=60) participated in one of three treatment conditions in which they reduced their respiration rates to 6 cpm and either inhaled quickly and exhaled slowly, inhaled slowly and exhaled quickly, or spent equal time inhaling and exhaling. Each of these three
groups had their arousal levels measured by skin resistance and subjective measures as they participated in a control, practice, threat anticipation, and threat confrontation condition. The results indicated that only inhaling quickly and exhaling slowly was consistently effective in reducing arousal rates in all conditions. The authors point out that this is consistent with techniques advocated by yogi masters for many years.

Two studies have found yogic breathing alone to be an effective treatment for depression (Brown & Gerbarg, 2005a, 2005b). In a 3 month trial, 46 patients diagnosed with Dysthymic Disorder (DD) were taught Ujjayi, Bhastrika, and cyclical breathing and instructed to practice once-a-day at home. Although treatment compliance was a problem (75% compliance) and drop-out rates were nearly 20%, the study reported a 68% remission of DD. Remission was defined as absence of criterion symptoms for DD and a significant change on the Hamilton Rating Scales for Depression (HRSD) (t=14.6, p<.01) and the Clinical Global Impression scale (t=9.9, p<.01) pre/post test. A second study by the same authors compared three treatment groups: bilateral electroconvulsive therapy (ECT), Imipramine (IMN), and yogic breathing. In a 4 week study comprised of 45 randomly assigned subjects with severe melancholic depression, yogic breathing proved to be comparable to medication but less effective then ECT. Mean scores as measured by the HRSD dropped significantly in all three groups: ECT from 26.75 to 2.8; IMN from 22.75 to 6.37; and yogic breathing from 25.16 to 8.38. These studies point to the efficacy of yogic breathing in treating depressive symptoms.

Shannahoff and Beckett's (1996) clinical case report on the efficacy of yogic breathing techniques for the treatment of obsessive compulsive disorders offers another method of using breathing in a clinical setting. The researchers employed specific yogic
breathing patterns in the treatment of eight adults diagnosed with obsessive-compulsive disorder (OCD). Shannahoff and Beckett met with their patients for 2-hours once a week to review and practice the breathing techniques. The subjects were compared every three months to their baseline on the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS). The study reported statistically significant results (p<.046) and showed a group mean improvement on the Y-BOCS of +54% over the year.

Brown and Gerbarg (2005a, 2005b) note that incorrect technique or the overuse of breath practices beyond the prescribed time limits can cause dizziness, lightheadedness, irritability, euphoric states, or psychosis in vulnerable patients, particularly those with bipolar disorder, dissociative disorders, or schizophrenic spectrum illnesses. They prescribe appropriate patient screening and competent instruction to minimize these risks.

It should also be noted that some patients have difficulty with yogic breathing techniques due to perceived conflicts between their own spiritual traditions and the historical Vedic/Hindu origins of yogic breathing. Careful attention must be paid to dress these techniques in the medical model so as to avoid potential cultural conflicts.

In summary, the findings related to using yogic breathing in clinical settings are positive but significantly more research is needed to affirm their specific utility. The use of pranayama techniques has been shown to create a relaxed and energized affective state (Harvey, 1983; Brown & Gerbarg, 2005a, 2005b). The importance of this in clinical application might be found particularly beneficial with clients suffering from co-morbid anxiety and depression. A purposed diagnosis of Mixed Anxiety-Depressive Disorder was introduced in the most recent DSM-IV as a category needing further research.
(American Psychiatric Association, 2000). The DSM-IV states the current prevalence rates as high as 2% in primary care settings and .08% in community samples with caveats added to denote the potential overlap with many existing diagnoses. Much research has been conducted examining co-morbid anxiety and depression (Leckman, Weissman, Merikanga, Pauls, & Prusoff, 1983; Kuzel, 2005; Brown, Schulberg, Madonia, Shear, & Houck, 2005; Keller, 1995) indicating that the prevalency rates of concomitant depression and anxiety may be much higher than previously thought. Given the need for an effective and drug-free treatment of these disorders, yogic breathing techniques are promising as a method to induce relaxation, generate positive affect, and a sense of vitality.

Breathing Retraining

Most of the recent academic research and debate involving breathing has centered on a series of techniques that fall under the rubric of breathing retraining. These techniques, popularized by the cognitive behavioral therapy (CBT) movement in psychology, have focused primarily on the treatment of panic disorder. This disorder, which is often chronic, afflicts approximately 1 in 75 people (American Psychiatric Association, 2000) and compared with other psychiatric disorders is the leading cause for seeking treatment in hospital emergency rooms (Weissman, 1991). Given the prevalence, chronicity, and costs associated with panic disorder, researchers have devoted significant effort into developing both theories and treatments for the disorder. The strong physiological elements often related to panic disorder, specifically hyperventilation, have lead many of these treatments to contain a component utilizing breathing retraining.
Breathing retraining is typically defined as any treatment conducted individually or in groups consisting of a number of simple exercises that work to train the patient to breathe in a more controlled and effective way. Patients are often taught in a manner consistent with the CBT model (i.e. limited number of sessions, homework, and in-session practice). During sessions patients are taught to decrease their respiration rate while breathing diaphragmatically. Specifically, clients are taught to differentiate “chest breathing” from diaphragm breathing by watching for and feeling for movements in these areas. Additionally, patients are taught to regulate the pace of respiration by counting 2 seconds during inhalation, inserting a 1 second pause between inhalation and exhalation, and 2 seconds during exhalation. Pacing tapes are often utilized as homework to aid the patients in following a 10-12 breaths per minute rate of respiration (Taylor, 2001).

When the basic skills are acquired, patients are asked to practice employing diaphragmatic breathing during a self-induced hyperventilation episode. Typically, a therapist will ask a patient to hyperventilate for 1-2 minutes and then practice controlling their respiration through the depth and pace skills they have mastered. This is practiced several times a session until the therapist assesses competence. This serves two functions: first, it teaches patients to utilize breathing retraining skills when they need them; and second, it serves as a safe exposure technique to reduce the fear associated with hyperventilation (Clark, Salkovskis, & Charkley, 1985).

The techniques associated with breathing retraining gained popularity in part due to the hyperventilation theory of panic presented by Ronald Ley (1985). Ley’s hyperventilation theory posits a relationship between arterial hypoconia (low pCO2) and anxious states. Simply stated, if we breathe too rapidly (i.e. hyperventilate) a state of
metabolic imbalance is created that induces feelings of anxiety. In its most acute form, Ley theorizes that hyperventilation is directly linked to panic attacks. From this perspective panic attacks have a physiological/biological etiology and therefore can be treated by behavioral and physiological interventions.

A more contemporary theory of panic disorder holds hyperventilation as a central element. According to the false suffocation alarm theory of panic (Klein, 1993), hyperventilation is an attempt to lower pCO2 to avoid triggering a suffocation alarm that is overly sensitive to pCO2 elevation. Both theories find support in the high incidence of reported respiratory distress (especially dyspnea) during panic episodes. In addition, researchers has found evidence for respiratory dysregulation in panic disorder, much of which is related to hyperventilation. For example, respiratory provocation tests (voluntary hyperventilation, CO2 inhalation) are able to trigger panic attacks in many of panic disordered patients (Papp et al., 1997; Rapee, Brown, Antony, & Barlow, 1992).

Systematic studies have confirmed the effectiveness of breathing retraining in reducing panic frequency (Clark et al., 1985; Rapee, 1985; Salkovskis, Jones, & Clark, 1986a). In a controlled study, Bonn, Readhead, & Timmons, (1984) compared the effects of breathing retraining in conjunction with exposure therapy to exposure therapy techniques only. The breathing retraining was comprised of two 1 hr sessions that focused on teaching basic diaphragmatic breathing at a rate of 8-10 cpm. They found a significant difference between the two groups 6 months after the end of treatment. The patients who had the breath retraining showed lower respiratory rates as well as reduced panic attack frequency, global phobia, somatic symptoms, and agoraphobic scores.
Similar significant reductions in panic attack frequency were reported by Clark et al. (1985) through breathing retraining. They developed a treatment package that utilized three elements: first, patients were taught how to over breathe and voluntarily induce a mild panic attack; next the effects of this procedure were then explained to the patient, and the cause of the unpleasant symptoms reattributed to hyperventilation; and finally, the patients were trained in breathing control techniques. The treatment was found to be significantly effective but due to lack of controls the authors were unable to distinguish which of the two treatment techniques, breathing retraining or reattribution, were responsible to the positive outcomes of treatment.

A more controlled study by Grossman, Swart, & Defares (1985) found that brief, seven-session therapy utilizing breathing retraining was effective in ameliorating the symptoms of hyperventilation syndrome and producing a marked decrease in psychological scales (i.e. symptom complaints, neurosomatic instability, trait anxiety, state, anxiety, and neuroticism) as compared to a control group. Only self-esteem was found to remain unaffected by the treatment.

These findings were confirmed and expanded by Tweeddale, Rowbottom, & McHardy (1994) in a study investigating the effectiveness of breathing retraining on scales measuring anxiety, depression and hyperventilation. In groups treated with breathing retraining the researchers found a significant decrease in anxiety (p<0.01) in all groups and a significant decrease in depression (p<0.05) in groups assessed as having hyperventilation syndrome. The researchers presented a few caveats as to the appropriateness of breathing retraining for some populations. Specifically, they proposed that the effectiveness of breathing retraining was contingent upon the commitment of
patients to regular performance of breathing exercises and a lack of resistance to the idea that breathing is related to symptoms.

In a more recent study, breath retraining has also been implemented successfully as a component in CBT treatment for rape survivors suffering from PTSD (Jaycox, Zoellner, & Foa, 2002). Jaycox et al. used breathing retraining to help clients manage anxiety and stress associated with the physiological symptoms of PTSD such as dizziness, lightheadedness, and breathlessness.

Some arguments have been raised as to the effectiveness of breathing retraining as a component of a cognitive/behavioral treatment. This movement has been motivated by CBT theorists who have proposed that breathing retraining might be considered a false safety aid because it attempts to keep a person “safe” from a false threat (i.e., panic and high anxiety; Kemphuis & Telch, 1998). According to CBT protocol, one potential reason that patients fail to show recovery in exposure therapy is that they engage in maladaptive safety aids that function to inhibit the corrective learning experience. By utilizing diaphragmatic breathing, patients are thought to be using a coping skill rather then confronting the feelings of panic or hyperventilation directly. To investigate this argument, Salkovskis, Clark, and Hackmann (1991) used a multiple baseline design across subjects to investigate treatment of panic attacks without breathing retraining components. The results indicated that CBT alone was effective in reducing panic attack frequency although the small number of subjects (N=7), lack of control measures, and lack of follow-up measures make it difficult to state much about the effectiveness of breathing retraining. This lack of clarity is especially true when considering the findings of the effectiveness of breathing retraining over time (Bonn, Readhead, & Timmons,
In a recent study (Schmidt et al., 2000), the effectiveness of breathing retraining was debated by comparing three conditions: (1) CBT without breathing retraining (i.e., treatment consisted of cognitive restructuring, interoceptive exposure and situational exposure); (2) CBT with breathing retraining; and (3) wait-list control. At post treatment, the two CBT conditions were superior to the waiting list and there were no significant differences between treatments. Again they did not report on follow-up measures.

The long-term effects of breathing retraining were evaluated by DeGuire, Gervitz, Hawkinson, & Dixon (1996) and were notably missing from Schmidt et al.'s (2000) study. DeGuire et al. concluded that breathing retraining has lasting effects on respiratory physiology by comparing pretreatment, posttreatment, and three-year follow-up data. Significant results were found when comparing end-tidal CO\textsubscript{2}, respiratory, and subjective measures at pretreatment/posttreatment (p<0.001). Interestingly when these measures were compared for post-treatment/three-year follow-up no significant changes occurred (p=.014) denoting the long-term effects of breathing retraining. This study is important as it represents one of the few controlled long-term studies investigating breathing retraining and supports the hypothesis that breathing retraining adds an element of longevity to treatment.

Bring additional clarity to the research; Berger (2001) conducted a small study (N=21) comparing the effectiveness of breathing retraining to CBT in treating panic disorder. Ten people with panic disorder were randomly assigned to a CBT without
breathing retraining and 11 were randomly assigned to breathing retraining group. The results showed that breathing retraining appeared as effective as CBT in the treatment of panic disorder, with no significant pre to post differences in the severity or frequency of panic attacks between groups. These finding indicate that the breathing retraining component of treatment is more important then previously thought. Additionally, because breathing retraining can be taught more rapidly then CBT, it might provide relief sooner and thereby be more beneficial.

In summary, the research provided overwhelmingly supports the argument that breathing retraining is an effective treatment for hyperventilation syndrome and in some cases depression and anxiety. Although CBT approaches alone have been shown to be similarly effective, only treatments including breathing retraining have been shown to provide continued reduction in symptoms in follow-up measures. Additionally, much of the research is inconclusive as to whether CBT or breathing retraining is a superior intervention. At this time it appears that using combinations of treatments (i.e., CBT with breathing retraining) will be relatively more effective.

Awareness

Awareness based breathing techniques differ from affect induction or reduction in that they are refrain from attempting to change the overt mechanisms of respiration or the physiological condition of the patient. These interventions have long been the hallmark of the meditative practices of the East, most notably Buddhism, but have been integrated more and more into Western mental health treatments. In the preparation of this literature review, I found that both Gestalt and Mindfulness theorists integrate breathing
interventions into treatment in a manner that promotes awareness. This section will begin with mindfulness based breathing interventions as they predate Gestalt therapy techniques and have, without doubt, influenced them.

Mindful Breathing

One of the most prominent researchers and advocates of mindfulness breathing interventions has been Jon Kabat-Zinn. A prolific author, Associate Professor of Medicine at the University of Massachusetts Medical School, the founder of the Center for Mindfulness in Medicine, Health Care, and Society, and the developer a manualized treatment program entitled Mindfulness-Based Stress Reduction (MBSR), Kabat-Zinn has worked to promote mindfulness based techniques for both patients and caregivers for over 27 years (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth & Burney, 1985; Kabat-Zinn, Lipworth, Burney & Sellers, 1987). Kabat-Zinn defines mindfulness as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 1990, p. 4). Techniques associated with mindfulness almost invariably incorporate breathing and have been widely used to reduce psychological distress associated with chronic illnesses and as a treatment for emotional and behavioral disorders (Kabat-Zinn, 1998). Based on his work with MBSR, Kabat-Zinn states that awareness of breath is “the easiest and most effective way” to begin mindfulness practice (Kabat-Zinn, 1990, p. 51). In a survey of several hundred of MBSR treated patients, researchers found that the single most important thing they gained from mindfulness treatment was, “the breathing” (p. 47). Kabat-Zinn (1990) hypothesized that “when we start paying attention to our
breathing on a regular basis, our relationship to it changes dramatically. The breath
reminds us to tune in to our body and to encounter the rest of our experienced with
mindfulness, in this moment" (p. 56).

A description of sitting meditation, a central component of MBSR, will illustrate
the importance of breath in the treatment. The patient maintains an upright sitting
posture, either in a chair or cross-legged on the floor, and attempts to maintain attention
on the somatic sensations of his or her own breathing. Whenever attention wanders from
the breath to the inevitable thoughts and feelings that arise, the patient will simply take
notice of them and then let them go as attention is returned to the breath. This process is
repeated each time that attention wanders away from the breath. As sitting meditation is
practiced, an emphasis is placed on simply taking notice of whatever the mind happens to
experience and accepting each arising thought and feeling without judgment, elaboration,
or action (Kabat-Zinn, 1990; Segal, Z., Williams, J. & Teasdale, J., 2002). The client is
also encouraged to use the same mindfulness skills whenever possible during the course
of their day by bringing awareness back to the present moment via the anchor of the
breath. Mindfulness theorists propound that using the breath as a touchstone provides a
consistent source of information regarding the patient’s present moment experience and
can work as a constant and reliable mechanism of emotional regulation.

A few studies have attempted to quantify the effects of breathing awareness.
Gruber (1977) produced a study attempting to reducing anxiety, tension and mild
depressive feeling by employing techniques that focused on paying attention to one’s
breathing. Using techniques inspired by Zen Buddhist mediation (zazen), Gruber sought
to have patients apply “bare attention” to the experience of their breath. He reported that
the responses were highly individualized, and not all of the techniques worked equally with all patients. Out of 28 trials, 9 were reported as “marked” and 12 were reported as “moderate” immediate short-term relief. Three cases reported “slight” relief and four cases reported no relief. Two patients reported feeling worse after the intervention.

Fasko, Osborne, Hall, Boerstler, and Kornfeld (1992) conducted a study seeking to evoke deep relaxation states by employing a Tibetan yoga breathing technique, known as “co-meditation”. This technique requires a caregiver to focus their attention on the chest of a reclined patient while making a sound, “ahaa” or counting up to ten, timed with the patient’s exhalation. The researchers provided no verbal instructions or suggestions about respiration, only that the caregiver provide a steady neutral sound coinciding with the exhalation rhythm of the patient. By employing the co-meditation procedure and comparing the results to a control group, the researchers found that respiration rates decreased between 46 to 75 percent after 15 minutes of treatment and subjects reported shifting to a state of deep relaxation when they moved from thoracic to abdominal breathing. Unfortunately, due to a small sample size (N=10) the decrease could not be reported as significant (p=0.10). This study, though lacking in statistical significance, gives some indication that when breathing is given import by the clinician, patients tend to employ abdominal diaphragmatic breathing naturally without clinician coaching and report feelings of relaxation and concurrently decreased respiration rates.

Even popular texts such as the “The Relaxation & Stress Reduction Workbook”, which has sold over 500,000 copies and is in its 5th edition, promote the use of breathing as an activation tool for awareness (Davis, M., Robbins, E., & McKay, M., 2000). The authors state that first step in using breathing as a therapeutic tool is to increase
awareness of one's breathing patterns. The technique provided in the workbook for bringing awareness to respiratory patterns is: first, close your eyes and put one hand on the abdomen and the other on the chest; second, without trying to change your breathing style simply notice which hand rises while breathing. It should be noted that these techniques are the first step toward activating diaphragmatic breathing and are not necessarily promoted as a stand-alone treatment.

Marsha Linehan has implemented one of the most popular uses of breathing interventions by including it as a component of Dialectical Behavior Therapy (DBT) (Linehan, 1993). DBT has been shown to be effective with hard-to-treat Borderline Personality Disordered clients by utilizing mindfulness as one of its four central skill components. Linehan admittedly draws heavily from the practice of Zen in her utilization of meditative breathing techniques and accredits Zen master, Thich Nhat Hanh in a number of the activities promoting mindfulness in the DBT workbook (pg. 144). It should be noted that breathing interventions are only one small part of the DBT curriculum and have not been empirically validated as separate treatments.

Mindfulness-Based Cognitive Therapy (MBCT) (Segal, Williams, & Teasdale, 2002) also combines training in mindfulness meditation with cognitive therapy. A large multi-site randomized controlled trial has shown that this combined approach can significantly reduce the rate of relapse in recurrent major depression (Teasdale et al, 2000).

In summary, there is little research that supports mindful breathing alone as an empirically validated treatment. There are, however, thousands of years of meditative traditions which have employed breathing as the central component in reducing human
suffering and there are an increasing number of empirically validated treatment approaches that utilize breathing in conjunction with other treatment strategies (e.g. DBT, MBSR, MBCT). Considering the preeminent role that breathing plays in these treatments, more research is needed to decisively articulate the function of breathing separate from the entirety of the treatment protocols.

Gestalt Therapy

Of the traditional psychological orientations, only Reichian and Gestalt therapies have, promoted the use of breathing as a central intervention. Gestalt therapists, similar to Reichian practitioners, conceptualize the body as inseparable from psychological health, and utilize the breath as an observable indicant of patient anxiety. Perls, Hefferline, and Goodman (1951), in their seminal text on Gestalt therapy clarify the use of breathing as a diagnostic tool. When discussing the manifestation of anxiety as a neurotic symptom, Perls et al., state that the most commonly overlooked expression of anxiety “is the experience of breathing difficulty during any blocked excitement. It is the experience of trying to get more air into lungs immobilized by muscular constriction of the thoracic cage”(p. 128). Gestalt therapists are encouraged to make a visual determination of a patients’ breathing patterns, paying attention to breathing responses to both neutral and emotional or stressful issues, and offer phenomenological observations as to these changes. To the Gestalt therapist, breathing is seen as playing an important role in linking the internal and external world. Perls et al. observe that,

... breathing plays such an interesting role in psychology and therapy. Breathing is a physiological function, yet its period of requiring the environment is so frequent, and indeed continuous, that it is always on the verge of becoming aware, a kind of contact. And in breathing one sees pare excellence that the animal is a field, the environment is “inside’ or essentially pervading at every moment. And so anxiety, the disturbance of
breathing, accompanies any disturbance of the self-function; thus the first step in therapy is contacting the breathing. (p. 401)

The main goal of Gestalt therapy, in addition to diminishing symptoms, is to enable a patient to become more fully and spontaneously alive and free from the blocks and unfinished issues which may inhibit satisfaction, fulfillment, and growth. Unlike traditional psychoanalytic techniques, Gestalt therapists emphasize a phenomenological approach to self-discovery while minimizing interpretation. Gestalt therapists propound that change occurs through gradual assimilation of experience, development of relationships, and the growth of awareness, rather than by accepting the interpretations of the analyst (Zahm & Gold, 2002). In order to accomplish this, the Gestalt therapist creates experiments that lead patients to greater awareness and a fuller experience of their possibilities. These experiments often work to bring the patient into the present moment and into the direct experience of the body. Gestalt therapists believe that the patient intrinsically knows the path toward healing and need only the opportunity to become aware of it. Awareness of breathing has been used by Gestalt therapists as a gateway for awareness of the organism as a whole.

In order to engage awareness, Perls et al. (1951) offer many different experiments designed to promote awareness of breathing. For example:

Exhale thoroughly, four or five times. Then breathe softly, making sure of the exhalation, but without forcing. Can you feel the stream of air on your throat, in your mouth, in your head? Allow the air to blow from your mouth and feel the stream of it with our hand. Do you keep our chest expanded even when no air is going in? Do you hold in your stomach during inhalation? Can you feel the inhalation softly down to the pit of the stomach and the pelvis? Can you feel your ribs expand on your sides and back? Notice the tautness of your throat; of your jaws; the closure of the nose. Pay attention especially to the tightness of the midriff (diaphragm). Concentrate on these tensions and allow developments (p. 168)
Gestalt therapists believe that the act of following the breath as it interacts with the body can offer important insight into where a patient is holding physical tension or anxiety. It is important to note that Gestalt therapists do not instruct patients to attempt to change these patterns, but simply to allow awareness to develop. Perls et al. (1951) suggest only that their patients pay attention and trust that through the expansion of awareness, change will occur. By ‘allowing developments’ the Gestalt therapist does not work to predict the reason for the breathing disturbance or a particular method for rectifying it, rather, the therapist puts trust in the ability of the patient to adjust and self-regulate in relation to the new information provided by breathing.

Perls et al. (1951) also promote expanding awareness of breath to the patient’s daily activities. They state,

In your daily activity, especially in moments of interest...notice how you tend to hold your breath instead of breathing more deeply as the situation biologically requires. What are you restraining by holding back your breath? Crying out? Shrieking? Running away? Punching? Vomiting? Deflation? Weeping? (p. 168)

As reflected in this passage, Gestalt therapists believe that restrictions in breathing can reflect limited affect, however, they do not believe that the role of the therapist is to induce affective states. As noted, Gestalt therapists are interested in a patient being able to breath naturally in response to the environment and their own internal demands. By gaining awareness of where breathing patterns differ from what is congruent with arising emotional and biological needs, Gestalt therapists work to access a more accurate and spontaneous state of being.

In summary, Gestalt therapists promote the use of breathing as a diagnostic tool to assess anxiety and as a method for building awareness. As the breath is seen as a
bridge between the external and internal worlds, or as the Gestalt therapist would say, a place of contact, special attention is placed on phenomenological changes in respiration. These changes are perceived as marking a patient's style of relating and level of emotional charge associated with a particular event or experience. The Gestalt therapist then uses these observations, without interpretation, to enable a patient to build self-awareness.

No research was discovered in the preparation for this literature review that clarified the effectiveness of Gestalt therapy breathing techniques. Empirically measuring the efficacy of these techniques is difficult considering that they are inseparable from the entirety of Gestalt therapy treatment and that the purpose of breathing interventions is to increase awareness, not change the patient.
DISCUSSION

Are breathing interventions incorporated into clinical psychology; and what are the most effective ways to utilize breathing interventions as part of a psychotherapy approach? The first sentence of this thesis, and indeed its central question, seems a fitting place to begin its conclusion. The first part of this question is answered by how readily breathing interventions have been incorporated into psychological practice. Beginning with Freud and continuing today with modern CBT and mindfulness techniques, breathing has maintained a significant prominence and importance.

The hypothesis of this study was that breathing interventions could be organized into three significantly different modalities: affect induction, affect reduction, and awareness. Although differences do exist in the theoretical and philosophical etiologies of specific breathing interventions, the organization of these categories provided a structure for the investigation and a language that transcended differing clinical approaches.

However, limitations are inherent in categorical organization. By confining the investigation just to breathing techniques, only an incomplete understanding of each orientation is possible. Unavoidable as that was in a study of this scope, I encourage readers to investigate further the nuances of each treatment approach before dismissing or employing it in clinical practice. Additionally, I discovered that some approaches, such as Gestalt therapy, that utilize breathing in more than one way, which forced this author to make somewhat reductionistic interpretations in categorization. Nevertheless, it appears that this type of organizational strategy may help clinicians understand and utilize breathing-based interventions more effectively.
That stated, the decision to use breathing interventions, and which type, must be grounded in professional knowledge that includes both practical and theoretical competence for them to be effective. The discipline of psychology has not yet reached a consensus regarding the competencies necessary to employ breath-related methods. One way to begin this undertaking is to continue to review and compile the literature on breathing in psychotherapy and from other relevant disciplines, such as medicine. Through that type of effort, specific interventions, potentially based on the hypothesis of affect inductive, affect reductive, or awareness modalities could be formulated. The challenge will be to create empirically supported guidelines for using different types of breathing interventions separate from their original orientations.

My intention is not to promote any specific breathing intervention but rather, after reviewing the literature, to identify which are most clinically applicable based upon their empirical validity and potential safety concerns. Of the approaches reviewed, breathing interventions under the rubric of affect induction appear to be the least empirically validated and pose the greatest safety concerns. Other techniques also lack empirical validation, but did not employ methods that could potentially cause significant damage to a patient’s mental and physical well-being.

Specifically, affect inducing interventions applied without proper training may produce powerful emotional states that can easily get out of control. Furthermore, therapists must be able to differentiate neurotic muscular armoring from the many possible medical problems associated with breathing limitations. Improper medical diagnosis can pose considerable danger. Additionally, inexperienced therapists trying to provoke a patient to deeper breathing can easily induce a hyperventilation crisis and not
recognize it as such. Finally, affect induction often involves breathing and touch concurrently; requiring the therapist to be skilled in identifying the risks associated with touch and to work safely in that arena.

Of the breathing interventions reviewed under the umbrella of affect reduction, both yogic breathing and CBT have proven to be effective treatments. Studies investigating yogic breathing techniques indicate it as a promising method of inducing relaxation, generating positive affect, and promoting a sense of vitality. More research may lead to more effective treatments for co-morbid depression and anxiety.

There are a few challenges in implementing yogic breathing interventions. First, incorrect technique or the overuse of breath practices beyond the prescribed time limits can cause dizziness, lightheadedness, irritability, euphoric states, or psychosis in vulnerable patients and must be proscribed and supervised by knowledgeable practitioners. Additionally, yogic breathing is often done in groups or classes and often in conjunction with yoga postures that may exclude individuals who are not in a group setting or have physical limitations. Furthermore, discord between a client’s spiritual traditions and the historical Vedic/Hindu origins of yoga may create cultural conflicts.

CBT breathing interventions by far have the most research support. This research provides significant evidence that breathing retraining is an effective treatment for hyperventilation syndrome and in some cases depression and anxiety. Although CBT approaches alone have been shown to be similarly effective, only treatments including breathing retraining have been shown to provide continued reduction in symptoms in follow-up measures. Additionally, much of the research addressing whether CBT or breathing retraining is a superior intervention is inconclusive. At this time it appears that
combining treatments (i.e., CBT with breathing retraining) is slightly more effective. It seems that therapists using breathing retraining would do best to include it in a larger regimen of CBT treatment protocol.

Finally, breathing interventions focusing on awareness were reviewed. Breathing was found to be a core component of mindfulness based interventions. Although little research supported mindful breathing alone, a number of empirically validated treatment approaches utilize breathing in conjunction with other treatment strategies (e.g. DBT, MBSR, MBCT). Significantly more research is needed to understand the role that breathing plays in these techniques.

Gestalt therapists also promote the use of breathing as a method for building awareness. Although no research was discovered that clarified the effectiveness of Gestalt therapy breathing techniques, some important and safe strategies were apparent. Centrally, Gestalt therapy was the only orientation reviewed that promoted the use of making phenomenological observations regarding the breathing patterns of a client. This technique was notably different from affect induction or reduction in that it did not attempt to change a client’s breathing patterns. Gestalt therapists work to bring awareness to breathing with the understanding that with awareness a client can begin to see how breath is connected with emotional content. This approach offers a non-invasive means of engaging the breath that is safe and pragmatic. Additionally, by focusing on the client’s awareness rather than external promptings, a more client-centered approach is maintained.

In sum, it appears the safest and most readily implemented modality of breathing intervention is one based on awareness. In addition to the reasons given above, these
Interventions enable clients to become sensitive to the interrelationship between the body and the emotions. This is especially important, as it is often the body that informs the mind of a particular affective state. When clients bring awareness to how breathing is connected to emotional content, they are more apt to understand their emotional response to environmental stimuli and respond in ways that are beneficial to their organism as a whole.

The philosophical foundations of Cartesian dualism in psychology have profoundly influenced how differently we treat our physical and mental well-being. Given this dichotomy, breathing interventions may provide an important element in the development of a psychological approach for bridging the perceived gap between the mind and the body. The incorporation of breath into clinical psychology, especially via awareness, offers a powerful method of invoking the relationship between the mind and body that is a rich and dynamic, yet safe and practical.
REFERENCES


