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# SELF-HYPNOSIS TAPES FOR ANXIOUS CANCER PATIENTS: AN EVALUATION USING PERSONALISED EMOTIONAL INDEX (PEI) DIARY DATA

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## Abstract

In a preliminary study, two self-hypnosis interventions delivered by audio-tape in the privacy of their own homes were practised ad hoc by 27 cancer patients to alleviate acute anxiety 'attacks'. Participants were randomly assigned to receive a tape teaching either progressive muscular relaxation or a light and slow breathing rhythm, both delivered in the context of hypnosis. Data on the incidence of acute anxiety episodes and ratings of both positive and negative emotions were collected prior to the intervention and post-intervention using the Personalised Emotional Index (PEI) via daily diaries. Participants showed significant improvement in both incidence of acute anxiety episodes and emotional states, although only the Breathing Training group produced significant improvement in all three measures (more positive and less negative mood states and fewer anxiety 'attacks').

**Key words**: anxiety, audio-tapes, cancer, diaries

## Introduction

This study was designed in response to a request from several members of a cancer support group in Auckland, New Zealand, for help with feelings of anxiety and panic using hypnosis or self-hypnosis. Sick populations, in particular patients diagnosed with cancer, are more likely to suffer some psychiatric morbidity than the non-ill population, so their request was deemed appropriate. A conservative estimate was made by Derogatis, Morrow, Fetting, Penman, Piasetsky, Schmale, Henrichs and Carnicke (1983) who found that 7% of new cancer admissions could be diagnosed with an anxiety disorder, and thus, by implication, many more cases of anxiety that do not meet diagnostic criteria must also exist. One recent study found that approximately 20% of those cancer patients who were referred for psychological consultation suffered panic attacks or panic disorder (Slaughter, Jain, Holmes, Reid, Bobo and Sherrod, 2000). Because of the need for treatment, it was decided to design a pilot study to compare two home-based, self-hypnosis interventions for feelings of panic or acute anxiety, with no non-treatment control group. The first of these was a hypnotic progressive relaxation intervention and the second was a self-hypnosis breathing training intervention (Laidlaw, 1994), both delivered by audio-tape format to be used in the form of self-hypnosis in the home.

Both relaxation and hypnosis-based treatments are considered to have specific benefits for members of this population who need to have good cognitive skills to manage their illnesses. Cognitive deficits following hyperventilation-induced cerebral hypoxia (prior to or full-blown panic) may attenuate the efficacy of therapies which require some cognitive understanding (Ley, 1994). Moreover, Ley (1994) stated that 'one of the heretofore unrecognised benefits of relaxation and hypnotherapy in psychotherapy may be the increased likelihood that the patient understands and remembers what it is the therapist says'.

This pilot study was intended to increase the sense of control over anxiety in cancer patients by providing participants with one of two self-hypnosis tapes that taught the technique in the privacy of their own homes. Self-hypnosis, characterized by heightened responsiveness to suggestions and less reliance on cognitive processing abilities, was used as the 'delivery system' for teaching the breathing control or relaxation techniques.

The relaxation tape of 10 minutes' duration involved an hypnotic induction and a detailed progressive muscular relaxation with suggestions of tranquillity. After practice, this technique induces both emotional and physical relaxation allowing the body to reach a state where stressors can have no panic-eliciting effect (Ost, 1988). Progressive muscle relaxation techniques have been used frequently for anxiety and stress relief in oncology settings and there are numerous case reports, uncontrolled studies and controlled studies that recommend its use. Carlson and Hoyle (1993) reviewed the efficacy of abbreviated progressive muscle relaxation training across 29 studies and found a moderate effect size (Pearson's $r$ =0.40). Their conclusions supported the use of audio-tapes for home practice and suggested that individual training was more effective than group sessions.

The breathing training involved the learning, within the context of hypnosis, of an ideal breathing rhythm for use during anxiety-provoking or panicky situations. The breathing technique was delivered after a short relaxation-based hypnotic induction. This allowed the participant to over-learn light (not deep) breathing at a physiological rate, one breath every five seconds. This tape, also only 10 minutes in duration, was instructional, with the technique, once learned, to be used ad hoc appropriately. Although acquiring the breathing rhythm for use in hyperventilation-induced anxiety-provoking situations was the principal goal, a secondary intention was, that by acquiring a coping skill, participants could increase feelings of self-efficacy, and perhaps enhance health outcomes as has happened with other brief hypnotic interventions (Ratcliffe, Dawson and Walker, 1995). Wilkinson (1990) claimed that 'experience shows that combining breathing control and self-hypnosis in reducing anxiety is worthwhile and appreciated by … patients'. The light breathing rhythm and self-hypnosis taught is the same as that described in Laidlaw (1994). In that pilot study, the technique proved to be an effective adjunct for treatment in anxious but non-ill people.

The aim of the present study was to test whether either of these two interventions that are cheap, require little practice and commitment, and are home-based holds promise as an additional tool for improving the quality of life in this and other highly stressed populations. The use of the self-hypnosis tapes, either 'Relaxation' or 'Breathing Training', was hypothesized to raise levels of personal control by teaching patients skills for coping with symptoms of negative mood due to stress and/or anxiety. The main outcome measures were ratings of daily diary data of overall mood, and the specific rating of frequency of acute anxiety episodes, characterized

by the participants as 'panic' or 'anxiety attacks'. No formal diagnostics were deemed necessary.

## Method

### *Subjects*

A series of talks on hypnosis was given to several groups of the Cancer Society of New Zealand (Auckland Division) at the end of which people who considered themselves to be in need of help to decrease the frequency of distressing acute anxiety episodes were invited to discuss entering into an hypnotic research study at no cost. Of the approximately 60 people who stayed to hear about the proposal, 35 people agreed to participate, age range 39–81 years (mean 58.4 years). Ten were male, 25 female. The study was approved by the appropriate human subjects ethics committee and all participants were provided an information sheet and signed informed consent. All participants were required to be post-diagnosis for at least six months, but participants included those who were seriously ill, including those who were moribund. The minimum criterion was set on the recommendation of Greer and Morris (1979) who wrote that emotions are commonly suppressed around the time of diagnosis, probably as a direct response to the diagnosis, and most distress is abated six months later. All participants were randomly assigned to one of the two intervention groups. They were aware that the other intervention tape would become available to them on completion of the study. No payments were involved. Eight subjects withdrew from the study for a variety of reasons: most could no longer be contacted after agreeing to participate; there was one death and another person died shortly after. Three further people did not fill out their diaries correctly. Once into the study, compliance did not appear to be an issue.

### *Measures*

The Personalised Emotional Index (PEI), used as a daily diary, is an assessment tool for rating common emotional states, obtaining ratings on 12 emotional constructs that are assessed using the participant's own language (Laidlaw, 1999). The 12 constructs are 'anxious', 'energetic', 'tired', 'confident', 'unsure', 'elated', 'depressed', 'agreeable', 'hostile', 'clear-headed' and 'ineffective', each rated from one extreme to the other on a 10 cm line. Factor analysis had identified only two overriding constructs of emotion, that of 'positivity' and 'negativity' in PEI data, with all of the positive emotions and all of the negative emotions grouped into these two variables (Laidlaw, 1999). In the present study, we were particularly interested in the frequency of acute anxiety episodes, as well as the overall variables of emotional 'Positivity' and Negativity, and because of small numbers, restricted our outcomes to these three variables a priori.

### *Procedure*

PEI daily diary data were collected for three weeks prior to intervention, followed by a break of two weeks during which the participants were to learn the technique from their self-hypnosis tape, and the resumption of the diary data for three weeks post-intervention. Once they had learned their intervention, they were encouraged to put it into effect at appropriate times. The two-week 'learning' phase of the study required participants to use the tape supplied three times a day at a time and place that was convenient to them. Recommended times were before getting out of bed in

the morning, once prior to sleep at night and at one other time during the day. As the diaries were suspended at that time, no data exists that indicates actual frequency of learning practice.

## Results

Participants' diaries of the PEI emotions showed great variability from day to day. As is usual in diary data, occasional entries were missed. Because of the wealth of data, a minimal number of missing entries were ignored in the evaluation of means. However, three participants had unacceptable amounts of missing data, thus they were eliminated from the data set.

Each analysis was of mixed design with two factors, the mood ratings which were primarily assessed with repeated-measures GLM analyses and self-hypnosis tape type, which was the between-subjects factor. Two data sets were prepared, one where all mood scores were averaged to produce one score for each three-week collection period (before and after intervention) then collated to produce the positivity and negativity scores (the 'parsimonious data set'), and one data set ('diary days') in which all diary days were each entered separately, with 422 days in each period.

### *Positivity*

Looking at a mixed analysis of variance (ANOVA) for all subjects together using the parsimonious data set revealed that there was a main effect of positivity with subjects showing an increase from before to after the intervention (357.6 to 390.3, respectively) ($F(1,22) = 6.1$; $p = 0.022$; MSe = 1999.7). In addition, there was a main effect of which self-hypnosis tape subjects used, where there were greater positivity scores listening to the 'Relaxation' tape relative to those listening to the 'Breathing Training' tape both before and after the intervention (overall means of 422 for 'Relaxation' and 337.5 for 'Breathing Training') ($F(1,420) = 46.2$; $p<0.001$; MSe = 24507) (Figure 1). There was no interaction between positivity and the hypnosis tape ($F = 1.4$). Using the diary days data set produced similar but enhanced results, there was a highly significant main effect of positivity ($F(1,420) = 18.1$; $p<0.000$; MSe = 10679.4).

When the participants were separated into two groups according to which tape they were using, the Breathing Training group in the parsimonious data set had a significant improvement in their positivity ratings ($F(1,12) = 11.07$; $p = 0.006$; MSe = 1019) and they also show the same improvement, albeit with a higher $F$, in the diary days data set ($F = 18.1$). The Relaxation group did not meet significance using the parsimonious data set, but did so with the diary days data set ($F(1,174) = 3.93$; $p = 0.049$; MSe = 10859.1).

### *Negativity*

Again, looking at all subjects together in the parsimonious data set, a mixed ANOVA revealed that there was a significant main effect of negativity once a change in health ratings that correlated with negativity was co-varied out, showing a decrease from before to after the intervention (190.3 to 173.4, respectively) ($F(1,21) = 6.5$; $p = 0.019$; MSe = 1813.5). There was no main effect for which self-hypnosis tape subjects used (Figure 2) and there was no interaction between negativity and hypnosis tape ($F = 0.94$).

Using the diary days data set, the main effect of a decrease in negativity was highly significant ($F(1,420) = 15.0$; $p<0.000$; MSe = 11398.3). In addition, there was a main effect of which self-hypnosis tape subjects used, where there were greater nega-

tivity scores listening to the 'Relaxation' tape relative to those listening to the 'Breathing Training' tape both before and after the intervention ($F(1,420) = 8.0$; $p = 0.005$; MSe = 28559.3). However, there was now an interaction effect between self-hypnosis group and negativity (see Figure 2). To clarify this, an analysis of negativity by hypnosis group was conducted by analysing the main effects of negativity within each group. Using the diary days data set, the Breathing Training group had a main effect of negativity with subjects showing a decrease from 212.7 to 189.7 ($F(1,246) = 10.7$; $p = 0.001$; MSe = 13182.9). The Relaxation group showed a marginally significant effect, decreasing their negativity from 165.4 to 156.4 ($F(1,173) = 3.4$; $p = 0.067$; MSe = 8926.6).

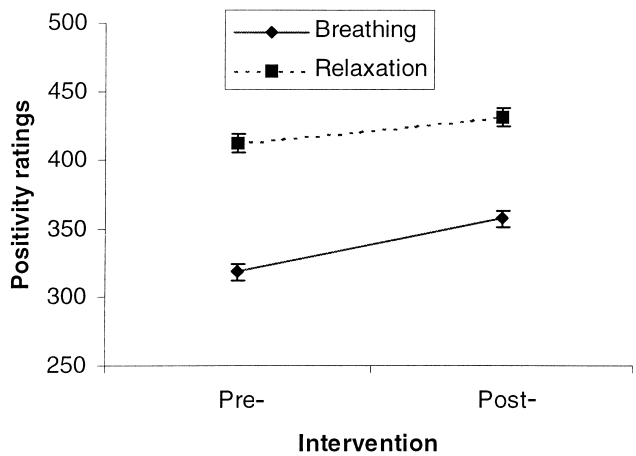


**Figure 1.** Change in positivity ratings by type of self-hypnosis tape before and after intervention.

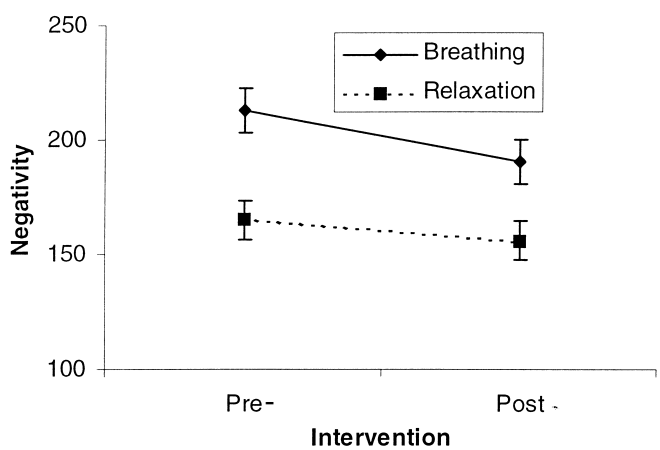


**Figure 2.** Change in negativity ratings by type of self-hypnosis tape before and after the intervention.

Using the parsimonious data set, the Breathing Training group had a marginal effect of negativity ($F(1,11) = 3.94$; $p = 0.07$; MSe = 1806.8). The Relaxation group data did not reach significance ($F(1,9) = 2.69$; $p = 0.14$; MSe = 2021.9).

*Anxiety 'attacks'*

Episodes of acute anxiety were counted by all participants. Using the diary days data set, 54% of days in the three weeks before the intervention were free of acute anxiety episodes. After the intervention this had increased to 70% of days clear of episodes. In a GLM mixed design using the diary days data set, there was a main effect of acute anxiety episodes with subjects showing a decrease from before to after the intervention (0.80 to 0.50, respectively) ($F(1,365) = 20.33$; $p<0.000$; MSe = 0.668). In addition, there was a main effect of which self-hypnosis tape the subject used, where there were lower anxiety attack frequencies in those using the 'Relaxation' tape relative to those using the 'Breathing Training' tape both before and after the intervention (overall means of 0.53 for 'Relaxation' and 0.98 for 'Breathing Training') ($F(1,365) = 17.6$; $p<0.000$; MSe = 1.348). There was no interaction between positivity and the hypnosis tape ($F = 2.05$).

Thus, on repeated measures, the Breathing Training group showed that they were generally less distressed and felt significantly better on most of the components making up the variables 'positivity' and 'negativity'. Both positivity and negativity were significantly changed for the better in the Breathing Training group, and also showed improvement in the Relaxation group (Table 1). When change scores were compared, a repeated-measures ANOVA provided support that the Breathing Training group had experienced a significantly greater increase in positivity ($F = 5.91$; $p = 0.01$) and a lessening of negativity ($F = 8.11$; $p<0.01$) when compared with the Relaxation group, and the Breathing Training group experienced a significantly greater reduction in numbers of anxiety attacks than the Relaxation group ($F = 4.53$; $p = 0.03$).

## Discussion

Living with a cancer diagnosis can provoke strong feelings of sadness, fear and anxiety which can lower self-esteem, impair relationships and can lead to feelings of helplessness and despair. It is a chronic condition, which can lead directly to a poor response to treatment (Walker, Heys, Walker, Ogston, Miller, Hucheon, Sarkar, Ah-See and Eremin, 1999).

This small study, which evaluated the use of two types of self-hypnosis tapes for cancer patients, demonstrated decreases in frequency of acute anxiety episodes and in negative emotions evaluated collectively, plus related increases in the conglomerate of positive emotions. These changes were stronger for those who were using the

**Table 1.** Mean values before and after the intervention

| Emotion | 'Relaxation' | | 'Breathing Training' | |
|---|---|---|---|---|
| | Before | After | Before | After |
| Positivity | 413.1 | 431.2 | 317.7 | 357.4 |
| Negativity | 160.8 | 156.6 | 216.8 | 191.3 |
| Anxiety 'attacks' | 0.53 | 0.34 | 0.98 | 0.62 |

self-hypnosis technique of breathing in a controlled light and slow rhythm than those using the relaxation intervention, although the participants as a whole benefited from having either one of these tapes.

These results must be viewed cautiously due to the different levels of mental distress shown initially in the two groups. As the figures clearly illustrate, randomization was not successful in that the Breathing Training group started the study significantly less positive and more negative than the Relaxation group. To explain the greater improvement in this group, their greater distress may have provided a better motivation for change than the less distressed assigned to the Relaxation group. Alternatively, the Relaxation group had less room to improve. On inspection of the data set, there were no apparent ceiling effects and few people in either group were free of acute anxiety episodes at the end of the measurement period even though many more episode-free days were recorded. Nevertheless, this study must be considered to be a pilot only, designed to give an indication as to whether or not such a short-term hypnosis intervention delivered by a 10-minute audio-tape could have an effect upon distress. Encouraging results have been demonstrated in this small sample, with a pointer towards the hypnotic breathing tape as being more efficacious. Clearly, the study needs replication with a larger sample, a wait-list control comparison, successful randomization, and perhaps separation into specific cancers and progression of disease.

There was high variability of emotional responses from day to day suggesting that 'one-off' ratings of emotional states in other studies may give a false indication of overall mood. This study provides some support for the use of visual analogue diary data for measuring emotional change over time. Use of the PEI over a course of 42 days proved to be a sensitive tool for assessing change in participants' emotional state. The data collected from the PEI indicated that participants experienced a significant change for the better not only in a decrease in the frequency of acute anxiety episodes, but a decrease in the other negative emotions as well, and a concomitant increase in positive affect. The learning of respiratory control techniques has been recommended by several researchers (Clark, Salkovis and Chalkley, 1985; Ley, 1989, 1991, 1994; Hibbert and Chan, 1989) who found that breathing control is an effective intervention for reducing panic. The loosely defined panic or anxiety 'attacks' measure corroborated the effectiveness of breathing control during such episodes. The original study describing this particular intervention which combined hypnosis with breathing training (Laidlaw, 1994), indicated that breathing control could be effective in reducing other types of anxiety that are not as acute or as specific as panic. This study provides evidence that such an intervention can be used even by people ill with cancer.

The Breathing Training group was taught an active coping technique within hypnosis that was designed to be used when necessary outside of hypnosis. The hypnotic relaxation tape, on the other hand, was presented as a passive coping strategy that could be used directly to produce a calm state. It could be hypothesized that issues of personal control, arguably of considerable importance in this ill group of people who have such a serious diagnosis, would be better served by teaching an active coping skill. These results add some support to Kraft (1990, 1992) and Sachs (1986), both of whom argue that hypnosis was one of the quickest and easiest methods for giving patients a sense of personal control and improving their confidence. Perhaps if the relaxation technique were to be taught as a skill to be used ad hoc, much as the breathing control was, the two techniques may not have differed in their results.

There is evidence (Strickland, 1978; Collings, Taylor and Skokan, 1990) that active coping strategies do increase personal control, and are linked to positive health outcomes, and concomitantly, that people with an active personality style make use of hypnosis better than their more passive participants (Gruzelier, Smith, Nagy and Henderson, 2001). The congruence of these ideas could be taken further in future research.

The initial results, of demonstrating significant decreases in incidence of acute anxiety 'attacks' and general improvement in mood states in cancer patients, are encouraging. This was accomplished using a simple, inexpensive and virtually effortless intervention. It is an intervention that uses little professional time, is easy for even the most ill to use and can be supplied at very low cost. This not to say that professional help is not necessary for patients in distress, but a short hypnotic tape such as that used with the Breathing Training group could be considered as an adjunct that could well be considered for distribution to ill anxious patients.

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