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Relaxation alone and in combination with rational emotive therapy: Effects on mood and pain

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Relaxation alone and in combination with rational emotive therapy: Effects on mood and pain

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Abstract

This quasi-experimental study investigates the effects of relaxation compared to relaxation combined with rational emotive therapy on mood states and pain. Subjects were 34 middle-aged and elderly chronic pain sufferers (26 women, eight men; mean age of 61.06 years). The relaxation group was given training in progressive muscle relaxation with guided imagery, while the relaxation with rational emotive therapy group participated in exercises to dispute irrational cognitions in favour of counter-cognitions that were more adaptive to pain. The Profile of Mood States (POMS) and visual analogue scale provided self-report data on mood and pain, respectively. Only subjects in the relaxation with rational emotive therapy group exhibited significant change following treatment - specifically, reductions in tension-anxiety, fatigue-inertia, and depression-dejection measures of the POMS scale. However, no comparable change was found in visual analogue scale ratings of pain for either group. The relative efficacy of relaxation with rational emotive therapy over relaxation alone in the improvement of mood can be explained by the fact that chronic pain patients typically experience affective distress, and rational emotive therapy by design, targets the cognitions responsible for such affective distress.

Key words: cognitive-behavioural treatments; pain; Profile of Mood States; rational emotive therapy; relaxation; visual analogue scale.
Introduction

There is considerable need for treatment-outcome research in the area of interventions for chronic pain problems. Investigation of behavioural techniques in managing chronic pain in geriatric patients is important, and in particular, there is considerable need for treatment-outcome research concerning the efficacy of psychological interventions, such as relaxation therapy or cognitive-behavioural therapy. Treatment of pain in the elderly has been inadequately investigated, as evidenced by a dearth of published reports in the behavioural medicine literature.\(^1\) Many patients might not obtain adequate relief from drugs and/or surgery,\(^2,3\) suggesting that psychological factors play a significant role in the perception of pain.\(^\)\(^\)

Arena et al.\(^1\) evaluated prospectively the effects of relaxation therapy among tension-headache sufferers, and they reported that there were significant decreases in both intensity and frequency of perceived pain. Likewise, significant decreases in frequency and intensity of headache, as a result of treatment combining relaxation therapy, cognitive coping and feedback have been reported.\(^4\) Cognitive-behavioural treatments assume that chronic pain involves simultaneous processing at cognitive, sensory affective and behavioural levels.\(^5-9\) Relatively few studies have systematically evaluated the effectiveness of cognitive-behavioural interventions for elderly chronic pain sufferers. Many studies into the efficacy of cognitive-behavioural treatments on diverse pain disorders have been reviewed.\(^10\) Results have been equivocal, leaving the question of the efficacy of cognitive-behavioural treatments unresolved. For example, it has been reported that operant behavioural treatment was significantly more effective than cognitive-behavioural treatment in managing chronic low back pain, although both treatments resulted in
decreased psychophysical disability. Likewise, it has been reported that cognitive-behavioural treatment facilitates control of low back pain over time.

One version of cognitive-behavioural treatment is rational emotive therapy which emphasizes the need to analyse maladaptive thoughts and to adopt alternative cognitive coping strategies. Cognitive-behavioural treatment usually embodies other key ingredients such as operant conditioning of healthy behaviours, and extinction of pain behaviours. It assumes that perceived pain is influenced largely by the way individuals think about their pain. Since rational emotive therapy is widely documented as an efficacious approach to altering mood and emotional states, use of this particular treatment for helping patients cope with chronic pain, most of whom are generally emotionally distressed, combined with use of a multidimensional mood-state instrument such as the Profile of Mood States (POMS) would seem desirable. Rational emotive therapy has been found to be as effective as, but no more effective than progressive muscle relaxation training in reducing pain from tension headaches and it has been employed on chronic low back pain patients in conjunction with stress management. Results indicated significant reductions in scores on subjective measures of perceived pain intensity and coping ability, even at 18 months follow-up.

Attempts to modify mood states in chronic pain patients have been encouraging. For example, a cognitive-behavioural treatment programme including relaxation therapy resulted in significant improvements in nearly all mood states measured. The effects of cognitive-behavioural treatment on cancer pain patients has been investigated and significantly less emotional distress has been reported in terms of POMS scores than for patients given only supportive
The cognitive-behavioural treatment programme consisted of goal setting, relaxation training and problem-solving techniques. Significant improvements on POMS scales have been reported following such cognitive-behavioural treatment programmes.\textsuperscript{22}

The POMS has been used to examine the relationship between sleep disturbance and chronic back pain for middle-aged patients with a mean age of 55 years.\textsuperscript{23} It has been reported that the POMS was a very useful indicator of pain-related affective distress.\textsuperscript{23,24} Also, it has been reported that "geriatric patients of 55 years and older can benefit as much as, if not more than, younger patients from multidisciplinary chronic pain rehabilitation programs."\textsuperscript{25} Research into the efficacy of rational emotive therapy combined with other methods, such as relaxation therapy, is lacking, especially in geriatric samples.\textsuperscript{26,27}

The present quasi-experimental study investigated the efficacy of a relaxation combined with rational emotive treatment programme, as opposed to relaxation training alone on a sample of elderly chronic pain patients. Outcome measures were POMS primary and higher-order scores, as well as a visual analogue scale - whereby patients can rate their pain intensity on a linear scale by placing a mark at the appropriate point on a line.\textsuperscript{28} While it was expected that both relaxation and relaxation with rational emotive treatments would result in decreased negative affectivity, increased positive states and reduced pain intensity, the beneficial effects would be significantly greater for the relaxation with rational emotive treatment group, than for the group given relaxation training alone.
Material and Methods

Subjects

Thirty-four elderly chronic pain patients, women and eight men, from a multidisciplinary pain clinic in suburban Melbourne and from another metropolitan clinic served as subjects. Patients were excluded if diagnosed as psychotic, that is schizophrenic or demented, or if they were already participating in another pain management programme. Many patients had not been given any pain therapy for several years. Mean age of the sample was 61.06 years (SD = 12.9 years). Mean duration of pain was 3.6 years (SD = 6.61 years), ranging up to 30 years. Some 88 per cent of the elderly pain patients were married, the remainder being either single or widowed.

Most of the pain patients were from working-class backgrounds their mean educational level being only 6-7 years. The sample of pain patients exhibited a diverse mix of diagnostic pain categories. Estimated frequencies of the categories of chronic pain reported included: lower back pain (40 per cent), post-herpetic neuralgia (20 per cent), upper limb pain (20 per cent), arthritis (10 per cent), headache (5 per cent) and cancer pain (5 per cent).

Procedure

The present study aimed to examine the effectiveness of relaxation compared to relaxation combined with rational emotive treatments using a within-groups repeated-measures design on mood-state and pain-dependent variables. Patients served as their own controls, thereby requiring fewer subjects than otherwise would have been needed. Twenty subjects were given relaxation alone as compared with 14 who received relaxation with rational emotive therapy.
Random assignment of individuals was not possible and the therapist could only administer one treatment within each clinic setting because of the practical difficulties involved, thus accounting for the differing number of patients in each treatment group. All once-weekly treatment sessions lasted 90 minutes for five consecutive weeks. The same therapist, a highly trained and experienced clinical psychologist, delivered all treatments to both groups. There were no drop-outs from either intervention programme.

**Relaxation alone condition**

Patients were allocated to one of three equivalent treatment groups of six to seven individuals. They were taught progressive muscle relaxation and guided imagery techniques as described by Blanchard and Andrasik. Patients also were exposed to autogenic training and controlled breathing techniques. Instructions were given verbally and audio-cassette tapes were provided so that they could practice at home.

**The five sessions comprised:**

**Session 1.** An overview of the programme was outlined. Introduction to relaxation therapy.

**Session 2.** Progressive muscle relaxation techniques were introduced. Discussion as to the effects of muscle relaxation was undertaken.

**Session 3.** Tapes of the previous session were given to patients. Feedback was elicited regarding the effects of progressive muscle relaxation. Guided-imagery relaxation was introduced and practised using warm beach and sea imagery.
Session 4. Tapes of guided-imagery techniques were provided. A review of the previous session was undertaken. Basic questions on diet and physical exercises were answered.

Session 5. A review of relaxation skills was presented and patients were asked to demonstrate the various methods.

**Relaxation with rational emotive therapy condition**

Treatment with relaxation and rational emotive therapy was based in part on the stress-inoculation approach which is partly a derivative of rational emotive therapy of Turk et al. Treatment also included training in progressive muscle relaxation, guided imagery and rational emotive therapy methods adapted from Walen et al.

Session 1.

Information on the pain-tension cycle, including aggravating factors, was provided. How relaxation reduces tension and concomitant pain was discussed. Patients were asked to record daily hours slept, physical sensations, thoughts associated with pain, and frequency of relaxation exercises, using self-monitoring and goal-setting activity sheets for daily recording at home.

Session 2.

Patients were introduced to the ABC, (antecedents, behaviours, consequences) model of rational emotive therapy. Examples of the method using "idea cards" were discussed. The model was demonstrated using a low-back pain member of the group. Progressive muscle relaxation was taught.
Session 3.
Patients were provided with a list of rational self-statements. Problems of awfulizing, absolutistic thinking, low frustration tolerance, self-downing, discomfort anxiety, catastrophizing and demandingness were illustrated. Examples from the group were used. Irrational and rational beliefs were discussed and adapted for pain situations. Disputation was introduced through the Catastrophe List. Irrational beliefs were discussed, and a list of stress-inoculation statements modified to help patients cope better with pain was devised. Patients were asked to practise at home.

Session 4.
Guided-imagery relaxation training using beach scenes was taught and audio-cassette tapes were provided. Homework was reviewed and patients' progress was monitored using daily activity sheets. Problem-solving was introduced and examples of pain experiences from the group were used. The group generated its own list of pain-inoculation self-statements. Alternative methods for dealing with pain were discussed and practical suggestions were formulated.

Session 5.
Patients demonstrated their skill in using either progressive muscle or imagery relaxation within the group. The ABC model and other concepts, including irrational beliefs, were reviewed. The pain-tension cycle was reviewed and patients discussed their knowledge of pain. Finally, patients were asked to talk about their prospective plans and goals and how they intended to deal with possible pain in the future.
Psychometric outcome measures

Profile of Mood States. Since chronic pain is a complex phenomenon involving various aspects of pain and negative affectivity, it was necessary to measure a wide diversity of mood states, rather than only the one or two states considered important on a priori grounds. Multidimensional mood states were assessed using the POMS, a measure of important clinical states, the main ones being tension-anxiety, depression-dejection, anger-hostility, vigour-activity, fatigue-inertia, confusion-bewilderment. The POMS has been reported to be a reasonably sensitive self-report indicator of mood-state changes in pain outpatients and it continues to be used as a multidimensional outcome measure in chronic pain studies. The POMS has received widespread use and has well-established relationships with other multidimensional mood state instruments such as the Eight-State-Questionnaire or 8SQ.

Boyle conducted an exploratory factor analysis of the POMS item intercorrelations on an Australian sample of 289 undergraduates, and took out a nine-factor oblique solution. The first six factors represented and provided cross-validational support for the clinical subscales measured in the POMS, and three additional factors, namely worthlessness, friendliness and alertness. Three higher-order factors loaded on the primary mood-state dimensions. These were labelled: state neuroticism, loading on anger, tension, depression and confusion; state extraversion, loading on vigour and friendliness; and arousal, loading on fatigue and alertness. The three higher-order POMS factors provided a more parsimonious account of the mood-state sphere. This depth psychometry approach enabled both a quantitative and qualitative analysis of effects of the treatments on patients’ emotional states. The first two of these higher-order factors have been found
repeatedly in the personality trait domain.\textsuperscript{35,39-43} Patients filled out the POMS and responded to the visual analogue pain scale (see section below) at the beginning of the first treatment session, and again at completion of the final session. Not only were scores obtained for each POMS subscale, but also a total mood disturbance score was calculated across all POMS subscales.

**Visual Analogue Scale.** To quantify the multidimensional aspects of pain, that is intensity/sensory, affective/reactive and evaluative/overall pain levels, a visual analogue scale test was administered along with the POMS instrument.\textsuperscript{44} Patients rated perceived intensity of their overall pain by marking a 10cm visual analogue scale line. The visual analogue scale ranged from "least possible pain" to "worst possible pain," and was brief, and easy to administer and score;\textsuperscript{45,46} it has been shown to be a valid indicator of pain intensity.\textsuperscript{47,48}

The visual analogue scale measures the sensory and affective components of pain, as well as overall pain intensity.\textsuperscript{49} This method has been reported to be more sensitive and reliable than other types of pain rating scales.\textsuperscript{50,51} The visual analogue scale correlates highly with the McGill Pain Questionnaire or MPQ, supporting its concurrent validity\textsuperscript{52,53,54} and it correlates significantly with the sensory and affective components of the McGill Pain Questionnaire.\textsuperscript{30,55} Visual analogue scores tend to be elevated in neurotic patients, as are also associated mood-state scores.\textsuperscript{56}

**Hypotheses**

Based on the literature cited above, the following hypotheses were tested:

**H1:** That patients in the relaxation treatment group would exhibit significant decreases in POMS negative mood states at re-test.
H2: That patients in the relaxation with rational emotive therapy treatment groups would exhibit significant decreases in POMS negative mood states at re-test.

H3: That patients in the relaxation treatment group would exhibit a significant decrease in mean visual analogue pain scores at re-test.

H4: That patients in the relaxation with rational emotive therapy treatment group exhibit a significant decrease in mean visual analogue pain scores at re-test.

H5: Both the overall multivariate effect and univariate mixed-design effects are expected to be significant.

H6: That there will be significant within m groups differences in overall negative affectivity in mean total mood disturbance scores.

Results

Means and standard deviations for the POMS and visual analogue measures are presented in Table I. Statistical analyses were undertaken by means of the Statistical Package for the Social Sciences (SPSS). With multiple dependent variables, it seemed prudent to undertake a single, comprehensive MANOVA (multivariate analysis of variance), in order to examine both the overall multivariate effect, as well as the separate univariate effects. A significant multivariate effect for the treatment x occasion interaction across all seven dependent variables, that is six main POMS subscale scores plus the visual analogue score, was obtained: $F(7,26) = 3.68, p < 0.01$, indicating further analyses were warranted. A significant repeated-measures effect was observed for the relaxation with rational emotive therapy group: $F(7,26) = 3.24, p < 0.05$.

As shown in Table 1, all POMS subscales exhibited significant decreases in mean scores after the relaxation with rational emotive treatment, as also did the total
mood disturbance score (also see Fig. 1). However, the corresponding repeated-measures effect for the relaxation group was not significant. Univariate results indicated that the variables contributing to the overall significant treatment × occasion interaction effect for the relaxation with rational emotive therapy group were tension-anxiety: F(1,32) = 8.36, p < 0.01, and fatigue-inertia: F(1,32) = 20.91, p < 0.001, respectively.

Fig. 1 Mean scores for total mood disturbance (TMD) and VAS pain scale before and after treatment.
Means and standard deviations for relaxation and relaxation + rational emotive therapy groups on profile-of-mood states and visual analogue scale, pre- and post-treatment

<table>
<thead>
<tr>
<th>Measure</th>
<th>Relaxation ( n = 20 )</th>
<th>Relaxation + rational emotive therapy ( n = 14 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td>Tension-anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>16.20</td>
<td>12.21</td>
</tr>
<tr>
<td>SD</td>
<td>(7.94)</td>
<td>(7.43)</td>
</tr>
<tr>
<td>Depression-dejection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M_{yo} )</td>
<td>23.35</td>
<td>9.93</td>
</tr>
<tr>
<td>( SD_{yo} )</td>
<td>(14.68)</td>
<td>(8.83)</td>
</tr>
<tr>
<td>Anger-hostility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M_{yu} )</td>
<td>13.15</td>
<td>6.64</td>
</tr>
<tr>
<td>( SD_{yu} )</td>
<td>(9.62)</td>
<td>(7.54)</td>
</tr>
<tr>
<td>Vigour-activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M_{va} )</td>
<td>8.75</td>
<td>16.29</td>
</tr>
<tr>
<td>( SD_{va} )</td>
<td>(5.49)</td>
<td>(6.67)</td>
</tr>
<tr>
<td>Fatigue-inertia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M_{f} )</td>
<td>11.90</td>
<td>10.86</td>
</tr>
<tr>
<td>( SD_{f} )</td>
<td>(6.70)</td>
<td>(5.02)</td>
</tr>
<tr>
<td>Confusion-bewilderment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M_{c} )</td>
<td>12.30</td>
<td>6.79</td>
</tr>
<tr>
<td>( SD_{c} )</td>
<td>(6.83)</td>
<td>(4.73)</td>
</tr>
<tr>
<td>Total mood disturbance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M_{t} )</td>
<td>72.15</td>
<td>34.14</td>
</tr>
<tr>
<td>( SD_{t} )</td>
<td>(43.04)</td>
<td>(33.14)</td>
</tr>
<tr>
<td>Visual analogue pain scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M_{p} )</td>
<td>74.10</td>
<td>27.64</td>
</tr>
<tr>
<td>( SD_{p} )</td>
<td>(28.82)</td>
<td>(24.03)</td>
</tr>
</tbody>
</table>

Note. Because of systematic differences in profile-of-mood states subscale scores between groups at pre-test, interpretation of results was confined to the within-groups effects.

Three of the clinical POMS subscales exhibited significant decreases in mean scores following the relaxation with rational emotive treatment. The univariate repeated-measures effects were seen for anxiety-tension: \( F(1,32) = 7.69, p < 0.01; \)
depression-dejection: F(1, 32) = 4.54, p < 0.05, and for fatigue-inertia: F(1,32) = 20.52, p < 0.001. None of the POMS subscale scores significantly decreased following the relaxation treatment alone. Corresponding repeated-measures results for the total mood disturbance score, calculated across all clinical POMS subscales, revealed a significant overall treatment x occasion interaction effect: F(1,32) = 6.87, p < 0.05. Univariate results indicated that the mean total mood disturbance score decreased for the relaxation with rational emotive therapy group after treatment: F(1,32) = 8.02, p < 0.01). There was no significant improvement for the relaxation treatment group.

Table 2

Means and standard deviations for relaxation and relaxation + rational emotive therapy groups on POMS higher-order factors

<table>
<thead>
<tr>
<th>Higher-order factor</th>
<th>Relaxation (n = 20)</th>
<th>Relaxation + rational emotive therapy (n = 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td>Neuroticism state</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>65.00</td>
<td>68.90</td>
</tr>
<tr>
<td>SD</td>
<td>(36.30)</td>
<td>(33.75)</td>
</tr>
<tr>
<td>Arousal state</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>29.60</td>
<td>32.05</td>
</tr>
<tr>
<td>SD</td>
<td>(10.33)</td>
<td>(10.61)</td>
</tr>
<tr>
<td>Extraversion state</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>29.70</td>
<td>30.35</td>
</tr>
<tr>
<td>SD</td>
<td>(14.39)</td>
<td>(13.37)</td>
</tr>
</tbody>
</table>

Note. The treatment x occasion interaction is significant for both neuroticism state: F(1,32) = 4.94, p < 0.05, and for arousal state: F(1,32) = 4.64, p < 0.05. The interaction effect for extraversion state is not statistically significant. Higher-order factors as elucidated by Boyle (1987).
A second repeated-measures MANOVA, this time carried out on the three higher-order factors, yielded a significant multivariate effect for the treatment x occasion interaction: \( F(3,30) = 5.60, P < 0.01 \). Means, standard deviations and univariate effects are presented in Table 2.

Only the neuroticism state showed a statistically significant decrease in mean score following relaxation with rational emotive treatment intervention: \( F(1,32) = 5.07, p < 0.05 \). As for mean visual analogue scores (Fig. 1), no significant effect on pain ratings was demonstrated by either treatment. Within the relaxation with rational emotive therapy group, patients did report "feeling better" emotionally about their chronic pain and significant decreases in reported levels of negative mood states followed this treatment.

**Discussion**

The purpose of the present quasi-experimental study was to examine the efficacy of relaxation with rational emotive therapy and relaxation interventions alone on the emotional distress and pain levels of patients suffering with chronic pain. While relaxation with rational emotive therapy treatment yielded no significant effect on pain reduction as measured by the visual analogue scale, the prediction that relaxation with rational emotive therapy would result in decreased negative affectivity, increased arousal and energy levels, and increased friendliness on the POMS higher-order factors was partially confirmed. However, relaxation treatment alone failed to decrease negative mood states significantly. In contrast to expectations, most of the POMS subscale scores for the relaxation group increased marginally, although not significantly, at the time of re-test. In fact, only two of the seven POMS scores showed a shift in the hypothesized
direction, and the other five exhibited a negative shift. Even though these differences were not significant due to the small sample size, there should be a warning that relaxation treatment might only reduce pain. On the other hand, the results were as predicted for the relaxation with rational emotive therapy group, suggesting that a more comprehensive cognitive-behavioural approach is advantageous in bringing about desired reductions in emotional distress, in addition to the diminution of pain *per se*.

As for the higher-order mood-state factors, neuroticism state representing a negative affective dimension decreased significantly following relaxation with rational emotive therapy training. Patients exposed to this treatment reported less distress and emotional disturbance regarding their pain. The mean higher-order arousal score decreased marginally from 39.71 at pre-treatment to 34.21 at post-treatment for the relaxation with rational emotive therapy group.

Follow-up assessments would be required to determine whether mood-state improvements for the relaxation with rational emotive therapy group have been maintained over time.\textsuperscript{24,58,59} Research is needed also using a variety of outcome measures and control groups. Possibly the relaxation with rational emotive therapy patients in the present study were under-reporting affective distress on the POMS since the obtained mean scores were generally well below norms for similar patients.\textsuperscript{16} It might also be that geriatric patients complain less about their chronic pain than is the case for younger patients.

In regard to the various hypotheses, H1, that patients in the relaxation group would exhibit significant decreases in negative POMS at retest was not supported. This suggests that relaxation therapy alone is unable to reduce negative emotionality associated with chronic pain. While there was a decrease in mean
visual analogue pain ratings at post-test (from 74.10 down to 66.80), this decrease was not statistically significant, so that H3 also was not supported. Likewise, H4, that patients in the relaxation with rational emotive treatment group would exhibit a significant decrease in mean visual analogue pain scores at re-test was not supported.

However, H2 was supported, so that relaxation with rational emotive treatment significantly attenuated negative emotionality associated with chronic pain. In accord with H5, the overall multivariate effect was significant, although this might have been due in part to the pre-existing differences between groups. More importantly though, three of the POMS subscales, namely anxiety-tension, depression-dejection, and fatigue-inertia exhibited significant decreases after relaxation with rational emotive treatment, whereas no significant changes in mean mood-state scores were seen following relaxation therapy alone.

Of the higher-order POMS factors, only neuroticism state exhibited a significant decrease in mean score following relaxation with rational emotive therapy treatment. However, for relaxation therapy alone, there were no significant decreases in the higher-order POMS factors. H6, namely that there would be significant within-groups differences in mean total mood disturbance scores for the relaxation with rational emotive therapy group only, was supported. At retest, the mean total mood disturbance score decreased significantly (from 34.14 down to 16.50) for the relaxation with rational emotive therapy treatment group, whereas in the relaxation group the mean total mood disturbance score actually increased slightly. This finding provides further evidence that relaxation therapy by itself is unable to reduce the negative emotionality associated with chronic pain.
Conclusions

In summary, the present study addressed two most important topics: pain outcome with the middle-aged and elderly, and the interrelationships of pain intensity and mood states. Both are fairly neglected in the literature, and are worthwhile topics to pursue. It was found that even though relaxation with rational emotive therapy methods have little effect on amelioration of actual pain levels, such methods at least appear to have some positive influence on patients' emotions and feelings, and presumably therefore on their functional status. Use of relaxation with rational emotive therapy programmes even for improvements only in the "psychological well-being" of geriatric pain patients might be a justifiable undertaking.

A number of caveats must, however, be considered. For instance, the POMS was administered before Session 1 and again after Session 5. Assuming that the treatment sessions "pump up" the patients, measured improvements in mood states might be an artefact due to the difference between the anxiety of entering a group therapeutic situation and graduating from it, as well as having just been exposed to the motivating session.

The method of assignment of patients to the two treatment groups, random allocation not having been possible due to practical constraints within the clinic environments, might help to explain why the pre-test scores for the relaxation group were consistently worse than those for the relaxation with rational emotive therapy group.

In addition, since one of the investigators (V.M.C.) was the clinical therapist for both treatment groups, the possibility of an experimenter-expectancy
effect as a possible cause of the greater improvement in the relaxation with rational emotive therapy group cannot be ruled out.

Clearly, scores on some of the POMS subscales showed progress and others a loss. Application of the MANOVA design allowed the best linear combination of these changes to maximize the multivariate F-value regardless of whether or not losses were combined with gains. But the logic of appraisal of treatments suggests that if losses are combined with gains, this should temper the recommendation regarding the particular therapy, rather than enhancing its support.

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