THE RELATIVE CONTRIBUTIONS OF
INFORMATION AND PERFORMANCE IN THE
TREATMENT OF DENTAL FEAR

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DECLARATION

I declare that this thesis reports my original work, that no part of it has been previously accepted or presented for the award of any degree or diploma by any University, and to the best of my knowledge no material previously published or written by another person is included, except where due acknowledgement is given.

Daniel Zeller
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Dental fear becomes clinically significant when it effectively prevents the person from seeking adequate preventative and routine dental treatment. The nature of dental procedures is such that it can readily condition an aversive reaction and maintain an avoidance response to the dental situation.

Behavioural therapy has been found to be effective in helping people with clinical phobias and fears. This study compared the relative efficacy of a set of information-based and performance-based behavioural techniques in the treatment of dental fear. Subjects were volunteers who normally would avoid dental treatment because of excessive levels of fear. Twenty-seven people returned pre-treatment questionnaires, and 15 completed the fear treatment programme. The 15 participants were divided into two groups, Information (equivalent to the educational and rehearsal phases of stress inoculation) and Performance (equivalent to the total stress inoculation package of education, rehearsal and application). Outcome was evaluated on the basis of self-report of fear and self-efficacy, as well as attendance for dental treatment.

Self-report of fear and self-efficacy had moved toward the more positive end of the continuum for both groups. At the two-month follow-up, no significant difference in attendance rates was found between the two groups, with 50 per cent of the Information Group and 43 per cent of the Performance Group having attended a dentist, and with all those who attended reporting feeling 'better' or 'much better' at the visit. It was concluded that the addition of the Performance tasks did not improve the efficacy of the Information treatment.
The results of this study are discussed in terms of implications for the psychological treatment of dental fear as well as for the clinical practice of dentistry with anxious patients.
DEFINITION OF FEAR

The word 'fear' comes from the Old English 'faer' meaning 'sudden calamity' or 'danger', and later came to be used for the uncomfortable feelings experienced in the presence of impending danger (Marks, 1969). Fear can be considered a normal response to a threat (actual or imagined), and consists of four components (Rachman, 1975):

1. behaviour ('fight or flight', startle)
2. subjective feelings (apprehension, restlessness)
3. physiological changes (secretion of adrenaline and noradrenaline)
4. attempt to avoid the situations where the threat is likely to occur

Phobia

Marks (1969) considers phobias as 'a special kind of fear'. He defines phobias on four dimensions of fear:

1. is out of proportion to demands of the situation
2. cannot be explained or reasoned away
3. is beyond voluntary control
4. leads to total avoidance of the feared situations

In phobias, elements of irrationality may come in at two points:

(a) where the fear stimulus is not objectively harmful to the person, e.g., cats, speeches (Melamed, 1969);
(b) with the disproportionate intensity of fear to the stimulus, even if potentially harmful.
Anxiety

The exact relationship between fear and anxiety is controversial. Martin (1971) traces the confusion to the distinction between stimulus-oriented and response-oriented definitions of anxiety. On the basis of response-oriented definitions, Martin considers anxiety and fear synonymous to the extent that overt behaviour in the two is essentially indistinguishable. Marks (1969) prefers to keep the terms separate on the basis of stimulus-orientation, where anxiety is seen as an emotional reaction to an inner, unknown stimulus. Furthermore, Marks prefers a distinction between all three (fear, phobia and anxiety) because of the range of phenomena each encompasses - admitting, however, that the distinction is partly arbitrary.

Function of Fear

Fear serves an adaptive function in animals and humans. The arousal of fear stimulates a search for a means of minimizing the impending threat or coping with it. An absence of appropriate fear can foster dangerously careless behaviour. A moderate amount of fear motivates people to alter their behaviours in order to avoid or minimize the threat, e.g., wearing a seat belt, study for examinations, etc. (Rachman, 1975). Furthermore, moderate fear actually alters a person's physiology to such an extent that he becomes more alert and vigilant. At another level, a moderate level of anticipatory fear allows the person to constructively work through his emotional reaction to the event before it actually happens, thus preparing for that eventuality (Langer, Janis and Wolfer, 1975).
Drive and Performance

The relationship between level of drive (e.g., fear) and performance is a complex one. Increasing the level of drive up to a certain point facilitates behaviour. However, according to the Yerkes-Dodson Law, the optimum level of drive differs between easy and hard tasks (see Figure 1). In particular, the optimum level of drive for complex tasks is reached at a relatively low level of drive and performance deteriorates quickly with increasing levels of drive (Murray, 1964). Thus, high levels of fear are implicated in a loss of performance, mental confusion and loss of concentration, making the person less able to cope with the impending threat (Rachman, 1975).

Dental Fear Project

In the study described here, the term 'fear' has been used in preference to 'anxiety' because fear:

1. implies a stimulus-based emotional reaction
The term 'fear' is used in preference to 'phobia' because:

1. it carries less connotation of psychopathology
2. it allows more flexibility, as the label 'fear'
   allows a wider range of intensities to be subsumed
3. it has less dependence on the issue of avoidance as a
   necessary component of its definition

DENTAL FEAR

Dental fear offers unique problems to the psychologist (let
alone a dentist and the sufferer). Several aspects of the procedures
used routinely in dentistry and the circumstances associated with the
attendance for dental treatment lead to a high likelihood of the
learning of a fear response to the dental setting:

1. in spite of improved techniques in modern dentistry and
   anesthesiology there still remains a substantial possibility
   of experiencing a strongly aversive stimulus during dental
   treatment. Aversive stimuli occur in the examination,
   injection, drilling, extraction, and so on. As such, dental
   fear has a more pronounced 'rationality' about it than many
   other fears seen clinically (Melamed, 1979).

2. For persons who are already fearful, dental visits usually
   coincide with dental pain, as that is the only time a fearful
   person will submit himself to dental treatment.

3. Unlike other phobias, a successfully desensitised patient
   is likely to encounter a repeated pairing of the neutralised
   cues and the noxious stimulus each time the person seeks
new treatment. Treatment of dental fears has to take this into account (Melamed, 1979).

4. No matter what the degree of fearfulness, a person inevitably must confront dental treatment at some stage of life. The impact of the severity of fear lies in that person's behaviour in the dental setting and the non-attendance for preventative or early treatment (Jackson and Shore, 1981).

Classification of Dental Fear

Roistadner (1977) studied the behaviour of dental patients showing signs of fear and defined three classes of 'odontophobes':

Class I: 'is reluctantly willing to submit to dental treatment, and approaches each dental appointment with trepidation. This patient may receive treatment with exaggerated behavior and will break a large percentage of dental appointments. When treated, this patient may abort many sessions by an intense emotional reaction or by feigning physical incapacity.'

Class II: 'is so severely psychologically handicapped that he will not permit in-office treatment under any circumstances. Hospitalization with complete immobilization by general anesthetic must be resorted to with these patients.'

Class III: 'reacts hypokinetically to treatment. Although this patient's anxieties are as deeply rooted as those of most odontophobes, he reacts passively to treatment. His responses are seemingly unemotional and automatic. Difficulty is encountered in eliciting normal responses to questioning; there are no hostile statements and no physical withdrawal; he may appear dull and unintelligent.'

The long term deleterious effects of dental avoidance are
obvious - advanced dental decay or disease frequently requiring extraction. But even less intense fear can lower the efficiency of routine dental treatment. In a study comparing high and low fear dental patients, Jackson and Shore (1981) found that the dentist stopped drilling more frequently when working on the high-fear patients than on the low-fear ones, so that whereas the total drilling time was the same for the two groups, chair-time was 20 per cent longer for the high-fear group than for the low-fear group. The extra time has economic implications to the patient. More importantly, the patient's behaviour adds extra stress to the dentist-patient relationship making the procedure even more aversive to both.

ACQUISITION AND MAINTENANCE OF FEAR

Traumatic Conditioning

Fear of a particular stimulus event is seen as a function of the pairing of pain/discomfort with the stimulus (Rachman, 1975). This model utilises the classical conditioning paradigm where a formerly Unconditioned Stimulus (dental surgery) is paired with a noxious stimulus (pain) and acquires a Conditioned Response (fear, avoidance, escape). The strength of the fear is proportional to:

(a) the intensity of the pain/discomfort

(b) the number of repetitions of the pairings

Furthermore, the learned fear acquires motivating properties, and drives behaviour such as avoidance and escape (Rachman, 1975), as well as the maintenance of such competing behaviours as the avoidance of obtaining effective dental treatment in order to relieve initial pain.

The classical conditioning paradigm has had to be revised
to accommodate some findings in conflict with its predictions (Rachman, 1975; Emmelkamp, 1979). However, Rachman considers dental fear, unlike other clinical fears, as being explained well in terms of traumatic conditioning. Thus Lautch (1971) found that all his dental phobic sample reported having had a traumatic dental experience at some time. Wardle (1982) found that the fear of pain was a significant contributor to dental anxiety in a group of dental attenders. Shoben and Borland (1954) looked at personality and historical variables of people with dental fear and found only two factors which distinguished fearful and non-fearful dental patients: (a) more frequent recall of a traumatic event, and (b) a higher rate of dental fear in their family.

**Vicarious Learning (Modelling)**

Evidence for vicarious learning of fears is suggested in the high correlations between fears of children and those of their mothers and other family members (e.g., Shoben and Borland, 1954; Bailey, Talbot and Taylor, 1973).

**Incubation Model**

The incubation model of fear predicts that moderate exposure to the fear stimulus leads to a greater reinforcing of fear response than zero or long exposure (Emmelkamp, 1979). It can be argued that dental treatment, by its very nature, falls into the moderate exposure category by virtue of the length of typical in-chair time (about 30 minutes for basic routines).

**Cognitive Factors**

Cognitive factors have been implicated in fear acquisition and maintenance. Meichenbaum (1977) considers negative (fear inducing) self-statements as being precursors of fear reactions. These self-statements then serve the function to maintain fear by recurring in
the presence of, or imagining of, the fear stimuli. Emmelkamp (1979) finds little evidence of the causal link between self-talk and fear, believing self-talk to be an associated effect of fear rather than the cause of it.

**Self-Efficacy**

Bandura (1977, p.193) defines 'Efficacy expectation' as 'the conviction that one can successfully execute the behaviour required... expectations of personal mastery affect both initiation and persistence of coping behavior. The strength of people's convictions in their own effectiveness is likely to affect whether they will even try to cope.' Fear is thus avoidance of the situations which the people believe will exceed their coping capacities.

Self-efficacy theory is an attempt to provide a model of cognitive processes involved in determining whether a person will perform a behaviour or not. Loss of self-efficacy in a given stressful situation means that a person will not put himself into the situation. Bandura sees behavioural therapies as systems whereby the client begins to see himself as being effective in carrying out the behaviour which he formerly thought himself unable to perform. Biran and Wilson (1981) found a high congruence between self-efficacy ratings and task performance during their treatment of a range of phobic persons. The experience of a traumatic event, on the other hand, is a situation of learning that one is not effective in mastering, or even coping with, in that situation.

Bandura (1977) says that efficacy expectations vary on several dimensions. Two dimensions that appear particularly relevant for observing dental fear are:

1. **Magnitude**: the degree to which expectations of efficacy extend to simple tasks only or to more difficult ones.
2. **Strength**: the degree to which expectations of efficacy are maintained in the face of disconfirming experiences. A person with strong expectations of mastery will persevere in his coping efforts despite disconfirming experiences, where a person with a low strength will stop attempting to cope early in the struggle.

Bandura sees efficacy expectancies and actual performance as being reciprocally related. Mastery expectations influence successful performance. Perception of success increases the magnitude and strength in efficacy (that is, increase mastery expectancies). It is for this reason that Biran and Wilson (1981) consider performance-based therapies superior to cognitive-based therapies, in that perceptions of self-efficacy are made easier by actually observing oneself being successful.

**FIGURE 2: RECIPROCITY OF SELF-EFFICACY AND PERFORMANCE**

![Diagram showing the reciprocity of self-efficacy and performance.](image)

**BEHAVIOURAL TREATMENT OF FEAR- AND PAIN-INDUCED STRESS**

Systematic desensitization dominated treatment of phobias for many years. However, a review of the outcome of studies of treatment of various phobias (Emmelkamp, 1979) has concluded that whereas systematic desensitization is effective in analogue studies, it
is not as effective in clinical populations. Emmelkamp (1979) concludes that the most effective treatment for clinical phobias is in vivo exposure.

In the field of medical, surgical and dental fears, in vivo exposure may in fact not be a possible mode of therapy for most problems. For example, although in dentistry it is possible to construct an approach hierarchy, it may not be ethically or practically possible to do a graded in vivo exposure based on it. Thus, Kleinknecht, Klepac and Alexander (1973) found that the most fear inducing stimulus was the injection. It is not possible to carry out the lower level items (such as drilling or extractions) without first giving the injection. Furthermore, it may not be ethically permissible to terminate a treatment procedure at all stages. For example, it is ethically unacceptable to give an anesthetic injection without intending to follow this up with treatment. It is not the same as asking a lift phobic to travel up and down a lift without going anywhere in particular. Also, a lift phobic can proceed from a fleeting stay in a lift, or a very short, one storey ride, to a lengthy continuous ride up and down, but how does one give a 'small' injection?

But even if in vivo exposure is not available in treating dental or medical fears, there are still many other treatment strategies available with a proven success record. King and Jackson (1981) provide a classification of strategies useful in reducing anxiety about aversive medical/surgical procedures. They view these strategies as preventive in the sense of providing stress preparation techniques to high-risk patients who face the unavoidable unpleasantness of some dental, surgical and medical procedures. They see all the psychological strategies as sharing one common element: pre-exposure to the impending
stressor. King and Jackson go on to say that 'in learning theory terms it could be argued that as a result of such preparation (training) the patient now perceives the stressor as being less aversive thereby removing the critical ingredient in the conditioning of trauma-induced excessive fear' (p.71).

The four major classes of stress-preparation techniques King and Jackson discuss are:

1. **Systematic Desensitization**: the graduated exposure in imagination to the feared stimulus event in the presence of an anxiety inhibitor, such as relaxation.

2. **Stimulus Pre-Exposure**: extensive non-aversive acquaintance with various aspects and routines of the stressful procedure. Videotapes have been used in the interest of economy. Several showings prior to the actual operation are required.

3. **Modelling**: observations of a model undergoing the feared procedures. Extensive use of video-taped modelling has been made in reducing dental fears in dentistry (Melamed, 1979).

4. **Stress-Inoculation**: the technique is a cognitive-behavioural training procedure and entails three phases (Meichenbaum, 1977): 
   
   (a) explanation of the nature of anxiety and stress, emphasizing the role of cognitions;
   
   (b) the patient is taught relaxation and coping self-statements. These are rehearsed and internalized.
   
   (c) the patient is given the opportunity to practise under actual stress situation.

A wide variety of techniques are used in stress-inoculation, including didactic teaching, relaxation training, modelling, discussion, reinforcement, self-instruction and behavioural rehearsal. The combination
of behavioural and cognitive strategies appears useful for 'prevention of distress, reduction of pain perception, and modification of pain responses in acute situations (i.e., aversive diagnostic and therapeutic medical and surgical procedures)'. (Turk and Genest, 1973, p.310).

The Cognitive-Behavioural Approaches

The two major components of cognitive-behavioural approaches in medical stress preparation have been Procedural/Sensory Information and Coping Strategies Training.

1. **Information**

   (a) **Procedural**: The most common approach to altering cognitive appraisal of any situation has been the provision of detailed information about the procedures and equipment to be used. The information needs to be quite detailed and direct. For example, Auerbach, et al.(1976, p.812) gave their dental patients information such as 'the first procedure is the removal of the attachment apparatus with a multicurette. This helps to loosen the tooth. A forcep will then be placed on the tooth, and a front-to-back rocking motion will be initiated.'

   (b) **Sensory**: In their review of the literature, Turk and Genest (1979) found that the procedural-oriented information described above may not be as effective as sensory-oriented information. Sensory information emphasises the sensations that are likely to be experienced during the procedures. For example, Auerbach followed the procedure description quoted above by the information that the patient 'may feel considerable pressure on your tooth tissues, but you should not feel any pain'.

In practice, the combination of Procedural and Sensory Information
is most commonly used, for example, Schmidt and Woolbridge (1973) for surgery, and Auerbach, et al. (1976) for dentistry, and has been found to be superior than either one alone (Turk and Genest, 1979), although the exact nature of the type and detail of information may have different effects on different personalities. Thus Langer, Janis and Wolfer (1975) found that patients with an internal locus of control preferred detailed Procedural/Sensory Information, but that patients with an external locus of control preferred non-specific information about the institution rather than the dental treatment.

2. **Coping Strategies**

Procedural/Sensory Information helps to alert the person of what to expect and know how to label the experience accurately. But prior behavioural preparation is necessary to manage the stress symptoms once they occur and are recognised. The training needs to enable the person to identify the particular stress he or she is experiencing, what stress reduction techniques to use, how to use them, and possessing adequate skill to use the techniques efficiently and effectively.

The nature of the coping strategies may vary with the actual noxious stimuli and situation. Coping strategies used in dental fear management have included, either alone or in combination, techniques such as self-distraction, relaxation, talking to the dentist, reinforcing self-statements (Matthews and Rezin, 1977). Tullman, et al (1979) found that some highly anxious dental patients spontaneously used denial as a coping mechanism and appeared less anxious than they subjectively felt.

A distinction is drawn between coping models and mastery models
In the coping model, the patient 'demonstrates initial apprehension (fearful behavior) yet overcomes the fear to perform the final behavior', whereas in the mastery model the person 'shows a competence and fearless behavior throughout the... procedure' (Melamed, 1979, p.189). The way the person perceives himself, as a coper or a master, can be expected to alter the nature of self-efficacy feedback he receives when in the stress inducing situation.

TREATMENT OF DENTAL FEARS

Dental fear has been examined systematically since the 1950s (Snoben and Borland, 1954). However, reports of psychological treatment of dental fear (in adults) only began to appear in the 1970s. These reports include single case studies (Mason, 1973; Klepac, 1975; Kleinknecht and Bernstein, 1979) as well as group studies (Shaw and Thorensen, 1974; Auerbach, et al, 1976; Matthews and Rezin, 1977; Wroblewski, Jacob and Rehm, 1977; Tower, 1980; Moses, 1980).

The range of treatment strategies have included:

1. Imaginal Desensitization (Klepac, 1975; Shaw and Thorensen, 1974; Gale and Ayer, 1969)
2. Pain tolerance training (Klepac, 1975)
4. Stress inoculation (Moses, 1980)
5. In vivo desensitisation (Mason, 1973; Kleinknecht and Bernstein, 1979)
6. Imaginal flooding (Matthews and Rezin, 1977)
7. Imaginal rehearsal (Matthews and Rezin, 1977)
<table>
<thead>
<tr>
<th>Study</th>
<th>Subjects</th>
<th>Treatment Groups</th>
<th>Duration</th>
<th>Dependent Variable</th>
<th>Follow-Up</th>
<th>Outcome</th>
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<tbody>
<tr>
<td>Shaw &amp; Thoresen</td>
<td>36 in 4 groups of 9</td>
<td>Modelling (relaxation, video observation, covert rehearsal)</td>
<td>6.1 hours for modelling</td>
<td>Fear measures</td>
<td>3 months</td>
<td>Modelling: 78 per cent</td>
<td>Good follow-up and control. Modelling was an unusual mixture of techniques</td>
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<td></td>
<td></td>
<td>Desensitization (audio taped) Placebo control (series of tapes on coping with general fear and anxiety) Assessment only control</td>
<td>8.3 hours for desensitization 10 x 30 minutes</td>
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<tr>
<td>Matthews &amp; Resin</td>
<td>50 in 5 groups of 10</td>
<td>Imaginal flooding given to 4 groups: High arousal/coping rehearsal Low arousal/nocoping rehearsal</td>
<td>Waiting list 1 interview plus 4 x 50 minute tapes of imaginal flooding 1 interview plus 4 x 50 min relaxation</td>
<td>Dental Anxiety 2 months Scale Semantic Differential B.A.T.</td>
<td>2 months</td>
<td>48 per cent of all flooding groups attended 30 per cent of controls attended Coping rehearsal most useful in high arousal group: 80 per cent</td>
<td>Poor follow-up</td>
</tr>
<tr>
<td>Wroblewski,</td>
<td>27 in 3 groups of 9</td>
<td>Symbolic modelling with relaxation Attention placebo</td>
<td>7 x 45 minute sessions within 2 weeks</td>
<td>Dental Anxiety 2 to 3 Scale Fear Survey B.A.T. Fear Thermometer</td>
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<tr>
<td>Jacob &amp; Rehm</td>
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<td>Symbolic modelling with relaxation Attention placebo</td>
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<td>Moses (1980)</td>
<td>24 in 4 groups of 6</td>
<td>3 components of stress inoculation: education coping plus application stress inoculation</td>
<td>2 sessions of 29 minutes each</td>
<td>Dental anxiety State-Trait anxiety Pain threshold and tolerance Dental attendance</td>
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<tr>
<td>Tower (1980)</td>
<td>40 in 5 groups of 8</td>
<td>Modelling with coping and affective verbalizations Modelling with coping verbalizations Modelling with affective verbalizations Modelling with no audio Assessment control</td>
<td></td>
<td></td>
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<td>Very short treatment</td>
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Comparisons of the different treatment techniques suggest the following outcomes (see Table 1 for a detailed overview of the relevant studies):

- Imaginal flooding was successful in allowing 48 per cent of the subjects to complete dental treatment, even though it had little effect in lowering the high anxiety (Matthews and Rezin, 1977).

- Symbolic modelling was more effective when coupled with relaxation. Symbolic modelling alone did not differ from attention placebo (Wroblewski, et al, 1977).

- Social modelling (utilizing relaxation, video observations of model and covert rehearsal) was superior to systematic desensitization. Both were superior to placebo control and assessment control (Shaw and Thoresen, 1974). Shaw and Thoresen's rate of success with the desensitization group (44 per cent completed treatment) is in accord with the Wroblewski et al figure of 48 per cent. Shaw and Thoresen modelling was clearly better at 78 per cent, though the procedure was clearly more than simple modelling.

- Teaching of coping strategies alone showed poor success rate (Tower, 1980), but this may have been due to a very short training period of two 29-minute sessions.

- A comparison of the components of stress inoculation showed that Education alone was no better than attention placebo, but that the total package led to less avoidance, though no change in self report anxiety (Moses, 1980).

- A comparison of two types of information (Specific procedural/
sensory versus General) found that their relative efficacy was related to locus of control: 'internals' preferring the Specific information and being unaffected by the ambiguities of the General information, and 'externals' preferring the General information, disliking the detailed specificity of the Specific information (Auerbach, et al, 1976).

Single case studies have found that for those dental avoiders who fear dental work due to experience of pain, or the anticipation of pain, training in the management of pain stress is of apparent benefit. Klepac (1975) gave successful pain tolerance training to two of his patients who had failed with systematic desensitization.

Perceived control of the situation has been studied in children (Corah, 1973), and indicates that giving the fearful dental patient control (e.g., a buzzer with which he can terminate treatment whenever he wishes) seems to reduce Galvanic Skin Response during high-stress procedures.

A notable dysynchrony between subjective levels of anxiety and behavioural performance. Two studies have found that whereas the fearful patients presented for and completed dental treatment following psychological treatment for their fear, their reported levels of subjective anxieties had not changed (Matthews and Rezin, 1977; Moses, 1980). The lack of correlations between behavioural, subjective and physiological measures of dental fear were observed by Kleinknecht and Bernstein (1978).

As can be seen from the review, not a great deal of information is available on the treatment of dental fear in adults.
Symbolic modelling, social modelling and imaginal flooding seem to have successes in allowing fearful dental patients to present themselves for dental treatment. Systematic desensitization is as effective as social modelling and imaginal flooding.

The arrival of the more cognitively oriented treatments suggest some optimistic possibilities. Information alone does not appear to be effective (Moses, 1980), but Auerbach et al (1976) suggest that this strategy used alone needs to be tailored to the personality of the subject. Combined cognitive-behavioural techniques, utilising such strategies as information giving and coping skills training appear to offer positive results (Moses, 1980). Other strategies showing promise include modelling (Shaw and Thorensen, 1974; Wroblewski, et al, 1977) and pain tolerance training (Klepac, 1975).

One such package which offers a combination of strategies found effective is Meichenbaum's (1977) Stress-Inoculation. It combines cognitive approaches such as Information, Self-Talk and Self-Efficacy evaluation, as well as behavioural approaches such as training in relaxation, in vivo or imaginal rehearsal, systematic desensitization (mostly imaginal during the extensive sessions of information giving and discussions) and stress recognition and labelling.

AN ALTERNATIVE CLASSIFICATION OF BEHAVIOURAL TREATMENT TECHNIQUES

The existence of cognitive versus behavioural approaches within what is globally known as 'behaviour therapy' implies some sort of dichotomous classification into:

1. those approaches which attempt to modify the person's thought patterns or attitudes which would then presumably
lead that person to change his overt behaviour.

The main technique for achieving this change is via talk between the therapist and client, or by observing a therapy confederate (model). In essence, the client is a behaviourally passive receiver of (corrective) audio or visual information on what to expect and how to behave. But this is not to be confused with London's (1964) concept of the 'insight therapies', because in behaviour therapy the corrective experiences are unilaterally given to the client, whereas in 'insight therapies' the corrective experience is generated in a reciprocal relationship between the client and therapist. However, the main goal of both the cognitive and talking therapies is a change in the cognitive structure of the client by the provision of the type of information which allows the client to change his conceptualization of the world or of himself.

This Information exchange strategy can include any attempt to teach the theory of 'correct' or 'acceptable' behaviour, intending this Information to change the person's cognitive set, and being finally manifested in the actual performance of the 'correct' behaviours. Examples of these techniques are:

1. Procedural/Sensory Information giving
2. Laboratory learning of coping skills such as relaxation, distraction, etc.
3. Observing another person demonstrate the desired behaviour
4. Changing the person's habitual cognitive styles about the situation or himself by self-talk

2. Those approaches which attempt to modify the person's overt
behaviour directly. The main technique of this approach is that the person's actual performance of the 'correct' behaviour is observed by the therapist and by himself. The performance can be real (i.e., actually doing) or symbolic (i.e., doing the behaviour in the imagination, and 'watching' one's own imagination). The underlying mechanism of success for both real and imaginary performance is described by Bandura (e.g., Bandura, Adams, Hardy and Hardy, 1980) as being the increase in efficacy expectation.

The Performance techniques include any attempt which requires the person to practise the 'required' behaviour either in the actual situation, in a similar situation, or in the situation 'replayed' in the imagination. The essential aspect of these procedures is that the person 'watches' himself performing the behaviour. The person watches himself being effective in the situation, i.e., being able to effectively cope with the fearful situation and the emotional reactions to it (Bandura, 1977). Examples of Performance approaches include:

- Pain tolerance training
- Imaginal rehearsal of coping
- in vivo desensitization
- Graded in vivo exposure

The distinction made in this Information/Performance classification lies in the modality of acquisition of cognitive material. Oatley (1980) defines three types of learning situations: school learning, skills acquisition and experiential learning. In school learning a body of
knowledge is passed didactically from the expert to the student. In skills acquisition the learning task is taken further, and the student is allowed to practise his skill, with the teacher/instructor giving his expert opinion as to the adequateness of the final performance. In both these cases, criteria of adequacy are external to the learner (i.e., in the teacher), and do not immediately affect the learner's schemata about himself. In experiential learning, however, the learner has to use his own self-observation and self-assessment of his functioning in the situation, thus creating his own criteria for effective behaviour and a more realistic set of self-efficacy expectations.

The Information modality described above can be likened to the schooling and skills acquisition modes of learning, whereby the new learned material comes from an external source and is externally monitored by the therapist. The Performance modality can be likened to the experiential learning mode, where the learner tests out his own behaviour and expectations against the reality of the world, and adjusts his behaviour and expectations according to any discrepancy perceived by him. Therapy is the situation where the opportunity for experiencing such a discrepancy is maximized by urging the person to try new behaviours.

Looking at the three phases of the Stress Inoculation technique, it can be seen that the Education Phase is equivalent to Oatley's school-type learning, being a didactic giving of a curriculum of knowledge. The Rehearsal Phase is equivalent to skills acquisition to the extent that in this phase the client's task is to learn and practise a set of skills prescribed by the therapist. It is only after the client has mastered the new skills to the therapist's satisfaction, that the client can use his new skill in the
Application Phase, and experience his own competency. Following the classification described here, it can be seen that the Educational and Rehearsal Phases of Stress Inoculation belong to the Information techniques, and the Application Phase is the Performance technique which permits the client to observe own behaviour and make own assessment of performance, thus allowing the client to adjust self-efficacy expectations in a realistic manner.

This classification in no ways is meant to imply an incompatibility between the two approaches. In fact, the two sets of techniques are best considered as complementary - each having the potential to influence the person's behaviour in its own way. In practice, it may not be feasible to use each one alone. This is especially true for the Performance approaches. An explanation of the treatment techniques to be used, and a justification of them, should be considered a necessary part of treatment. As such, this implies that a minimum of information about the therapist's conceptualization of the presenting problem must be made to the client in a didactic manner.

Moses (1980) compared the relative contribution of the Educational Phase of stress-inoculation to the rest of stress-inoculation (Rehearsal and Application) as well as to the total package. He concluded that Education did not enhance the effects of Rehearsal and Application. In this study, Moses' division of the stress-inoculation package is disputed. It is claimed that the separation of Education plus Rehearsal ('Information') versus Application ('Performance') or, better still, versus the whole of Stress-Inoculation, is a more correct basis for comparison.

This Study compares the relative efficacy of the two Information components of stress-inoculation (as defined here), with
the total stress-inoculation package, defined as Performance here, in helping people with fear-induced dental avoidance to overcome their fears of dentistry sufficiently to allow them to attend a dentist for routine treatment at regular intervals. This aim implies that the dental patient actually finds the dental situation less aversive (anxiety-provoking) after undertaking some or all of the stress-inoculation therapy.

**HYPOTHESES**

1. Both Information based and Performance based approaches will have some positive efficacy in increasing the probability that a dental avoider will attend a dentist for routine treatment.

2. Performance based approaches will be superior to the Information only approaches in increasing the probability of dental attendance in dental avoiders.

3. Self-efficacy measures will change in the same direction that behaviour (i.e., dental attendance) changes.

4. Anxiety experienced during dental treatment after fear therapy will be lower than anxiety felt during dental treatment before fear therapy.
METHOD

SUBJECT POPULATION

Two advertisements were placed in the popular press (App.1a) asking for volunteer, adult participants in a study being conducted at the local University. The study was called a 'Dental Fear Project' and participants were defined as people who 'need or would like dental work, but whose fear keeps them from seeing a dentist'. In addition, a leading newspaper wrote a short article about the intended Project (App.1b) and placed it in one of its regular columns. Since one of the two newspapers carrying the advertisement was of the type which is delivered to every household, the notice of the study reached a potential saturation within the community of 250,000 persons.

SUBJECT SCREENING AND ASSESSMENT

1. The SS were initially requested to indicate their interest by contacting a given telephone number and leaving their name and address and phone number. These people were contacted as soon as possible by the E, either by phone or in person. This was generally achieved within 1 to 2 days. During the first contact the Treatment Programme and goals of the study were broadly outlined. The appropriateness of the S's further participation and interest were discussed. Criteria for inclusion were:
   (a) they were over 18 years of age;
   (b) they had a history of dental avoidance for work other than emergency (viz. moderate to severe toothache, or equivalent);
   (c) they ascribed their avoidance of dental treatment to fear of the dental situation;
(d) they were prepared to attend up to six treatment sessions.

2. If the S appeared appropriate, and was still interested, he or she was sent a questionnaire battery:

(i) **Dental Fear Survey** (App.2). Based on Kleinknecht et al (1973), the DFS is a 25-item scale where each item represents a normal stimulus found in the dental situation. The S's task was to complete three ratings for each item:

a. **Fear Reaction:** a 5-point scale ranging from 0 to 4, where 0 means 'none or little' and 4 means 'extreme: heart pounding, gasping for air'. Possible score ranges from 0 to 100. A low score implies a generally low level of fear of the dental situations or a low level of fear of most aspects of dentistry with or without a high level of fear of a few specific aspects. A high score implies a high level of fear on most aspects of dental work, with or without a few low items.

b. **Self-Efficacy:** a 2-point scale of whether the S would go ahead with treatment at this point, if given a choice, or terminate treatment due to unbearable discomfort. Possible score ranges from 0 to 25 ('a' responses being scored 0 and 'b' responses being scored 1). A low score implies that the S would terminate treatment at most stages of the routine. A high score implies that the S would continue with most of the treatment once in the dental situation. It is important to realise here that the scores are difficult to compare between subjects: choosing to terminate at an early stage, especially at the stage of making an appointment, means...
that normal treatment is effectively prevented. However, some of these people predicted that they would continue with treatment once they had actually attended.

**c. Confidence**: a 5-point scale of how sure the S is of his Self-Efficacy rating. Here 1 means 'I am very sure this would happen' and 5 means 'I don't really know what would happen.' Possible score ranges from 25 to 125. A low score implies that the S is quite sure how he would behave in the dental situation, and a high score implies that he is quite uncertain as to whether he would actually choose (a) or (b) of the Self-Efficacy if faced with the real situation.

**(ii) Fear Questionnaire** (App.3). Based on the 55 fear items of Hallam and Hafner's (1975) Fear and General Symptom Questionnaire. The FGSQ was used in preference to other fear scales because of the factor analytic work performed on it. SS were required to complete a 4-point rating for each item, where 1 means 'none or almost no fear at all', and 3 means 'great fear, I always avoid it.' Possible score range is from 0 to 165. A low score implies a low level of fear reaction to everyday situations, with or without a high fear to a few specific events. A high score implies a high level of fear to many situations, and might suggest a person with multiple phobias.

**(iii) General Information** (App.4): a questionnaire seeking background information on the nature, extent and development of the dental fear. Specific information extracted included demographic data (age and sex), time since last dental visit, onset of fear, subjective listing of fear stimuli, dental fear in family of origin.
3. If the SS failed to return the questionnaires, they were re-contacted by phone and asked if still interested in participating.

4. The questionnaires were over-viewed with the intention of eliminating inappropriate cases, i.e., those persons who (a) did not report a high level of fear in dentistry, (b) did not consider fear as the main reason for dental avoidance, or (c) who avoided dentistry for other reasons, such as financial costs. The qualifying SS were contacted again for the purposes of arranging the Dental Visit and sessions times for the Treatment Programme.

5. All SS were invited to make a visit to a nominated dentist before beginning the Treatment Programme. The Dental Visit served two functions:
   (a) it was used as a Behavioural Approach Test;
   (b) it was used to observe the effect of Perceived Control on the SS's preparedness to attend and undertake dental treatment.

   It might be remembered here that the SS had already indicated, by their participation, that they would not normally attend a dentist except in a crisis (typically a toothache of moderate to severe intensity).

   The Dental Visit was introduced to the SS as a 'real-life test' of their fear. The fact that they would have complete control over the situation and that they would be able to terminate the dental work any time they wished without feeling embarrassed or thinking that they had done something to upset the dentist, was emphasised. Furthermore, the SS were informed that the dentist was a confederate and that he specialized in treating fearful dental patients. (The nominated dentist was a fully qualified private practitioner who was the President of the local branch of
the Australian Dental Association, and the National President
of the Association for the Advancement of Anaesthesia and Sedation
in Dentistry.) The SS were given the dentist's name and telephone
number, and were required to make their own appointment. Where
SS declined to attend due to their unease, they were immediately
offered a choice of session times for the Treatment Programme.

6. Dental Visit: the SS were met in the dentist's waiting room by
the E. Two things were done here:

(a) the S's control over the situation was re-emphasized;
(b) the S was asked to complete the State Anxiety version of
the Spielberger State-Trait Anxiety Inventory (Spielberger,
Gorsuch and Lushene, 1970). The S was then called into
the surgery where a standardized dental procedure was
adopted by the dentist (App.5). The dental procedure involved
the initial dental check followed by a single tooth restoration.
The hierarchy involved 14 steps, ranging from 'making the
appointment' to 'filling'. Declining to attend was scored 0.

7. After the dental procedure was completed, the S was again seen
by the E in the waiting room:

(a) if the S completed the approach hierarchy, he was given the
opportunity to withdraw from the programme by being asked
'Since you have completed the dental treatment, does it mean
you have overcome your fear of dentistry and wish to withdraw?'
If the S said 'No', he was asked why he still wanted to
continue. Statements by the SS which were accepted as
desiring to continue had to include the spontaneous self-report
that (i) they still experienced anxiety/fear
(ii) they wished to overcome their negative reactions.
(b) If the S did not complete the approach hierarchy he was asked 'Are you still interested in continuing with the psychological part of this programme or do you want to stop here?' Any statement indicating desire to continue was accepted.

(c) SS who previous indicated that they would attend the Dental Visit, but failed to do so, were re-contacted. They were asked if there was a reason for their non-attendance. If they indicated that they failed to attend because (i) their fear became too great;
(ii) they could not bring themselves to attend a dentist after all they were reassured that their choice was acceptable to the E, and were asked if they still wished to attend the psychological part of the programme or if they wished to withdraw totally.

(d) All SS who indicated a desire to continue were asked to choose one of the session times available. They were given time and date of commencement and a map showing the location of the meeting room.
FIGURE 3: FLOW CHART FOR SUBJECT SCREENING

Advertisement

Subjects' Inquiries

Examiner Contact

inappropriate

STOP

appropriate

Pre-Treatment Questionnaires

no return

Examiner Contact

withdraw

STOP

return

continue

Examiner Contact:

Invitation to Dental Visit

withdraw

Decline but Continue

Accept

fail to attend

Examiner Contact

withdraw

STOP

attend

continue

TREATMENT PROGRAMME
TREATMENT

Five parallel sessions per week were offered in small groups (3 to 4 persons in each). These included two evening times as well as daytime to enable people in full-time employment to attend. In addition, if any S missed a regular session an individual 'catch-up' session was given. Initially the SS chose the session which was most convenient to her,* and then the sessions were arbitrarily allotted to each of the two Treatment Groups. All therapy was conducted by the Experimenter, who was a psychologist with five years of experience in individual and group work within a clinical setting.

The treatment model which followed was based on Meichenbaum's (1977) Stress Inoculation Model. The first of the Treatment Groups ('Information') corresponded to Meichenbaum's Educational and Rehearsal Phases, and the second group ('Performance') utilized the Educational, Rehearsal and Application Phases. Thus, the Performance Group differed from the Information Group only in that the Performance Group was made to apply stress management technique in a practical way, whereas the Information Group was given only a theoretical introduction to the techniques. More particularly, the Information Group was presented with a series of talks on the nature of Fear and Pain as well as being introduced to the practice of two major stress management techniques. These techniques were taught in a general way and not related directly to management of fear in the dental situation. The Performance Group was given the same set of talks as the Information Group as well as the opportunity for a performance-based practice of Pain Control and Cognitive Rehearsal of Fear Control.

* From here on, the female version of the third person will be used since all eventual participants were female SS.
Information Group

The Information Group was given four sessions of approximately 1 1/2 hours each, as well as homework exercises after the first three sessions. In addition to the talks, extensive take-home notes were given in the form of 'Info Packs'.

Session 1: The first session served as a general welcoming and introduction. Info Pack 1 ('Pain, Fear and Anxiety') and Info Pack 2 ('The Psychology of Fear and Pain') (App.6a and 7a) were presented and discussed in detail. Topics covered included the physiology of Fear and Pain, subjective measures of emotions, symptoms of fear and anxiety, psychological factors influencing the intensity of fear and pain, the concept of personal space and a discussion of three excerpts from relevant writings on fear and pain (Leahy, 1962; Weekes, 1977; and Meares, 1970). At the end of the session Homework Sheets for Info Packs 1 and 2 (App.6b and 7b) were handed out. Homework consisted of questions about the contents of the Info Packs.

Session 2: Info Pack 3 (App.8) introduced the SS to a simple relaxation procedure. This relaxation procedure was described as operating on two levels: as an initial breathing exercise to be used in reaction to perceived hyperventilation, and as a method for deep muscular and mental relaxation. The SS were given one trial of leader-led relaxation. Homework consisted of practising relaxation at least once a day. In addition, Info Pack 4 ('The Dental Experience') (App.9) was presented. This Info Pack attempted to describe, in some detail, the Factual and Sensory occurrences during a typical dental visit. This was introduced as an exercise in knowledge about the dental situation in order to give the dental patient a greater feeling of control over the situation. SS were
asked to read the Info Pack and add any other items they considered relevant, and to underline those items they felt were particularly aversive to them.

Session 3: The third session involved the topic of 'Self-talk' (App.10a). This Info Pack discussed the function of Negative and Positive Self-Talk as regulators of behaviour. The opportunity for identifying one's own Negative Self-Talk in the dental setting and converting it to PositiveSelf-Talk was offered. Homework (App.10b) included questions about the Info Pack and the completion of lists of Negative and Positive Self-Statements applicable to the individual S in the dental situation.

Session 4: The fourth session was devoted to a summary and review of the Programme as well as being a general discussion about fear and dentistry. The ways the two techniques (Relaxation and Positive Self-Talk) could be used were discussed but no application was conducted. At the end of this session a general recommendation was made that this was the best time to attend a dentist (of their choice, not necessarily the one previously nominated). Permission for follow-up contact was requested.

Performance Group

The Performance Group was given five sessions of approximately 1½ hours each. Sessions 1 to 3 were identical to those of the Information Group.

Session 4: In this session the Cold-Pressor Test (Spanos, Horton and Chase, 1975) was used to simulate pain and severe discomfort. The use of self-talk and relaxation were discussed in such a situation, and the S practised these pain management techniques during the Cold Pressor Test.
Session 5: A further handout, 'Cognitive Rehearsal' (App.11), was disseminated. This handout discussed the use of imaginal rehearsal as a substitute for in-vivo practice. A detailed outline of the stimuli events encountered in seeking and undergoing dental treatment, and methods of intensifying the imaginal process were discussed. One leader-led practice trial was conducted. SS were encouraged to practise cognitive rehearsal, especially of the events particularly fearful to them in an attempt to improve their coping skills when they find themselves in the real situation. Permission for follow-up was sought and a recommendation was made that this was the best time for them to try out their fear management skills in the real situation.

POST-TREATMENT ASSESSMENT

Three post-treatment assessments were performed:

1. Dental Fear Survey. All ratings (Fear Reaction, Self-Efficacy and Confidence) were repeated.

2. Programme Evaluation (App.12). A questionnaire was sent with the above. Items included:
   (a) a measure of Relevance and of Usefulness of each component of the treatment Programme. Each item was rated on a 4-point scale, with 0 meaning 'not at all' and 3 meaning 'much';
   (b) the extent to which each S completed the Homework requirements;
   (c) suggestions for improvements to the Treatment Programme;
   (d) suggestions for dentists to improve their approach;
   (e) a re-statement of their fears of dentistry.

3. Two-month phone follow-up. SS were contacted and data sought on:
(a) visits to dentist since participation in the Programme;

(b) their reaction to the visit/s on a 5-point scale ('much better, better, same, worse, much worse');

(c) whether they went as a result of a crisis (e.g., toothache) or for routine or non-urgent work;

(d) any reason for non-attendance.
RESULTS

SUBJECTS

Number

Thirty-seven inquiries were received as a result of the advertisements and article appearing in the newspaper. Of these, one was unavailable for re-contact, another wanted free treatment only and withdrew when informed this was inappropriate. A third subject decided that he was inappropriate and withdrew.

The 34 remaining subjects expressed an interest and requested the pre-treatment questionnaires. These were sent as soon as possible. If the questionnaires had not been returned within a reasonable time a reminder phone call was made. Further subjects dropped out at this stage.

A total of 27 questionnaires were returned. All the 27 were contacted with the invitation to attend the Dental Visit. Three subjects had decided in the meantime not to continue, or were unable to do so. Of the remaining 24 subjects, 16 attended the Dental Visit and three indicated they would decline the opportunity. The other five subjects decided to discontinue or were unavailable for continuation due to other circumstances beyond their control (e.g., going to hospital, job transfers, etc.). Thus 19 subjects began the Treatment Programme. Of the 19, one failed to attend at all, and a further three did not attend beyond the first session. Table 2 summarises the fates of the volunteers.
TABLE 2: FATE OF RESPONDENTS TO PUBLIC NOTICES

<table>
<thead>
<tr>
<th>STAGE</th>
<th>N ENTERING</th>
<th>DROP-OUT</th>
<th>REMAINING N</th>
</tr>
</thead>
<tbody>
<tr>
<td>First contact</td>
<td>37</td>
<td>3</td>
<td>34</td>
</tr>
<tr>
<td>Pre-treatment questionnaires</td>
<td>34</td>
<td>7</td>
<td>27</td>
</tr>
<tr>
<td>Second contact (invitation for Dental Visit)</td>
<td>27</td>
<td>3</td>
<td>24</td>
</tr>
<tr>
<td>Dental Visit</td>
<td>24</td>
<td>5</td>
<td>16 attended</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 declined</td>
</tr>
<tr>
<td>Treatment Programme</td>
<td>19</td>
<td>4</td>
<td>15</td>
</tr>
</tbody>
</table>

Thus, a total of 15 respondents completed the Treatment Programme and a total of 12 respondents failed to complete the Treatment Programme but had returned the Pre-Treatment Questionnaires. In the following analyses, the 15 subjects who completed the Programme are referred to as 'Participants' and the 12 subjects who returned the Questionnaires but did not proceed with the Programme are referred to as the 'Non-Participants'. It was important to compare the two groups to observe any systematic bias that may have occurred in the self-selection procedure that had occurred. Unfortunately, no information is available about the respondents who did not return the Questionnaires or who did not choose to receive them.

Avoidance

Mean length of time in years since last dental appointment for the Participants was 4.0 years, and 3.7 years for the Non-Participants (n.s.). Figure 4 shows that the modal length of avoidance for the Participants was 1.5 to 2.5 years, with a range of 9.5 to 12 years, while for the Non-Participants modal length was 6 to 7 years, with a range of 0 to 7 years.
Table 3 shows that all the Participants (100 per cent) and 10 of the Non-participants (81 per cent) were female.

**TABLE 3: SEX DISTRIBUTION IN PARTICIPANT AND NON-PARTICIPANT GROUPS**

<table>
<thead>
<tr>
<th></th>
<th>PARTICIPANTS</th>
<th>NON-PARTICIPANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALES</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>FEMALES</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15</td>
<td>12</td>
</tr>
</tbody>
</table>
Participants were significantly older than the Non-Participants (t=2.19, p < .05). The ages of the Participants ranged from 27 to 52 years (x=38, S.D.=8.2) and that of the Non-Participants ranged from 19 to 48 (x=31, S.D.=8.3). However, the difference seems to be too small to have clinical implications.

**TABLE 4: AGES OF PARTICIPANTS AND NON-PARTICIPANTS**

<table>
<thead>
<tr>
<th></th>
<th>PARTICIPANTS</th>
<th>NON-PARTICIPANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>x</td>
<td>38</td>
<td>31</td>
</tr>
<tr>
<td>S.D.</td>
<td>8.2</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>t=2.19, p &lt; .05</td>
<td></td>
</tr>
</tbody>
</table>

**DENTAL FEAR SURVEY (DFS)**

Table 5 shows no significant difference in the mean Fear Reaction for the two groups. However, it was observed that only one out of the 15 Participants scored more than 80, whereas four of the 12 Non-Participants scored more than 80 points (χ²=2.7; n.s.).

**TABLE 5: DENTAL FEAR SURVEY: FEAR REACTION**

<table>
<thead>
<tr>
<th></th>
<th>PARTICIPANTS</th>
<th>NON-PARTICIPANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>x</td>
<td>64</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>n.s.</td>
<td></td>
</tr>
</tbody>
</table>

The last observation suggested that there might be a difference
in the extreme range of the intensity of fear in the two samples. It can be logically argued that it is only the high-intensity fears which are problematic, so that a comparison of high-intensity fear ratings only is clinically relevant.

Table 6 looks at the high-intensity Fear Reaction, Self-Efficacy and Confidence scores for Participants and Non-Participants on the DFS. High-intensity Fear Reaction was defined as a rating of 3 ('Great; heart racing, sweaty palms') or 4 ('Extreme; heart pounding, gasping for air'). The Self-Efficacy scores are the frequency of 'a' ('No matter how bad, I would stand it and go on with treatment'). The Confidence scores are the means of the ratings across items.

The analysis of the DFS scores shows that the Participants had significantly fewer high-intensity fear items (Wilcoxon Rank Sum Test, p < .05) (Ferguson, 1971), with 'drilling' once again scoring highest, for both the Participants (93 per cent) and Non-Participants (92 per cent). Perceived Self-Efficacy also showed statistical significance (Wilcoxon Rank Sum Test, p < .001), suggesting that the Participant group saw themselves as being more likely to endure dental treatment discomfort and continue. Confidence scores showed that the Participant group were more confident of their Self-Efficacy judgments (Wilcoxon Rank Sum Test, p < .001), suggesting that the Non-Participant group is more uncertain of themselves in the dental situation and perhaps more confused. In summary, Table 16 shows that the Participants had fewer intense fears of the dental situation, and were more confident of being able to tolerate more aspects of dental treatment than the Non-Participants.
TABLE 6: PARTICIPANTS VERSUS NON-PARTICIPANTS OF FEAR REACTION (HIGH INTENSITY), SELF-EFFICACY AND CONFIDENCE

<table>
<thead>
<tr>
<th></th>
<th>FR(HI)%</th>
<th>S-E %</th>
<th>CON. X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P</td>
<td>N-P</td>
<td>TOT</td>
</tr>
</tbody>
</table>
| 1. Thinking²  | 0 33 15 | 80 55 69 | 1.7 2.5 | 2.5
| 2. Calling    | 0 33 15 | 87 64 77 | 2 2.4  | 2.4
| 3. Driving to | 20 33 22 | 93 64 81 | 1.9 2.2 | 2.2
| 4. Approaching office | 40 50 44 | 93 73 85 | 2.1 2.5 | 2.5
| 5. Waiting room | 33 50 41 | 93 73 85 | 2.1 2.3 | 2.3
| 6. Smell       | 40 50 44 | 93 64 81 | 1.8 2.5 | 2.5
| 7. In surgery  | 53 67 59 | 93 82 88 | 2.1 2.5 | 2.5
| 8. Lying on chair | 60 75 67 | 87 82 85 | 2 2.6  | 2.6
| 9. Dentist approaching | 73 58 67 | 93 82 88 | 1.7 2.5 | 2.5
| 10. Preparing instruments | 47 67 56 | 93 82 88 | 1.4 2.5 | 2.5
| 11. Opening mouth | 47 42 44 | 93 73 85 | 1.9 2.8 | 2.8
| 12. Probe and mirror | 60 42 52 | 87 82 85 | 2.3 2.6 | 2.6
| 13. Mention injection | 60 75 67 | 86 73 81 | 1.8 2.5 | 2.5
| 14. Needle into mouth | 53 83 67 | 93 73 85 | 1.9 2.4 | 2.4
| 15. Prick of needle | 53 83 67 | 93 64 81 | 1.9 2.7 | 2.7
| 16. Mention of drill | 73 83 78 | 93 64 81 | 2.1 2.5 | 2.5
| 17. Drill into mouth | 87 83 85 | 80 64 73 | 2.3 2.5 | 2.5
| 18. Hearing drill | 80 83 81 | 80 64 73 | 2.7 2.5 | 2.5
| 19. Drill grinding | 93 92 93 | 80 64 73 | 2.5 2.6 | 2.6
| 20. Gagging on saliva | 53 75 63 | 80 82 81 | 2.4 2.6 | 2.6
| 21. Mention extraction | 60 92 74 | 87 73 81 | 2.3 2.6 | 2.6
| 22. Pliers gripping | 60 92 74 | 80 73 77 | 2.4 2.5 | 2.5
| 23. Worry about pain | 67 75 70 | 60 73 65 | 3.1 2.6 | 2.6
| 24. Feeling tooth moved | 73 92 81 | 87 73 81 | 2.1 2.6 | 2.6
| 25. Tooth pulled out | 73 75 74 | 87 73 81 | 2 2.7  | 2.7 |

1 FR(HI)= Fear Reaction (High Intensity): '3' or '4': per cent of SS obtaining
S-E = Self-Efficacy: per cent of 'a' responses for each item
CON = Confidence: mean rating on the 1 to 5 point scale

2 See Appendix 2 for full description of items

n=15 n=12 n=27 n=15 n=11 n=26 n=15 n=11
Another way of looking at the Fear Reaction scores was to look at the items which produced high frequencies of high-intensity ratings. Thus 93 per cent of all Subjects rated their fear associated with feeling the drill grinding on their teeth (Item 19) as being 'great' or 'extreme'. The items associated with high-intensity fear in 70 per cent or more of the Subjects are listed in Table 7.

TABLE 7: ITEMS RATED HIGH INTENSITY FEAR BY 70 PER CENT OR MORE OF ALL SUBJECTS ON THE DENTAL FEAR SURVEY

<table>
<thead>
<tr>
<th>ITEM</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. Feeling the drill grinding in your tooth</td>
<td>93</td>
</tr>
<tr>
<td>17. Feeling the drill being put into your mouth</td>
<td>85</td>
</tr>
<tr>
<td>18. Hearing the drill whirring inside your mouth</td>
<td>81</td>
</tr>
<tr>
<td>24. Feeling your tooth being moved about by the pliers</td>
<td>81</td>
</tr>
<tr>
<td>16. Hearing the dentist tell you he is going to use the drill</td>
<td>78</td>
</tr>
<tr>
<td>21. Hearing the dentist tell you he is going to pull out your tooth</td>
<td>74</td>
</tr>
<tr>
<td>22. Feeling the pliers grip your tooth</td>
<td>74</td>
</tr>
<tr>
<td>25. Hearing and feeling the grinding as your tooth is being pulled out</td>
<td>74</td>
</tr>
<tr>
<td>23. Imagining that the anesthetic will not stop the pain</td>
<td>70</td>
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</tbody>
</table>

It can be seen from Table 7 that the issue of Drilling firstly and Extraction secondly are the events which are associated with the highest frequencies of high-intensity fear. The fear of Pain comes third.

FEAR QUESTIONNAIRE

Table 8 summarises mean scores across items on the Fear Questionnaire. No significant difference in the level of fear of everyday events was found between the Participant and non-Participant groups. In another comparison, mean scores reported by Hallam and
Hafner (1978) from their study of phobic patients were compared to the mean scores of the Participant and Non-Participant ratings combined. The Dental Fear Subjects were significantly lower in overall fearfulness than the Hallam and Hafner sample (Wilcoxon Rank Sum Test, p < .01). This suggests that the sample of subjects in this study had fewer fears of general life situations than a group of subjects likely to present themselves to a mental health facility.

GENERAL INFORMATION

Data from the General Information form was classified into categories and is summarised in Table 9. In this Table, Fear Stimulus refers to the responses given to the open-ended question 'Describe in detail, what it is about dentistry that makes it hard for you to attend'. The responses were classified into the following categories (see Appendix 13 for examples):

'Drill': sight, sound or feeling of the drill

'Injection': any reference to injection, including fear of the anesthetic wearing off too early or being ineffective

'Examination': any reference to the use of probe or inspection of the teeth in general

'Extraction': extraction of tooth, sounds and feelings involved in this

'Loss of Control': any reference to loss of control, embarrassment at own behaviour, intrusion into personal space

'Dentist': any reference to the dentist's manner, attitude or competence

'Pain': any direct reference to the experience of pain or any time the word 'pain' is mentioned. When the word 'pain' was used in conjunction with a specific stimulus, it was
<table>
<thead>
<tr>
<th>ITEM</th>
<th>$P(x)$</th>
<th>N-P($x$)</th>
<th>TOT($x$)</th>
<th>Hallam &amp; Hafner ($x$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>Hallam &amp; Hafner</td>
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</tbody>
</table>

1 P = Participants, n = 15  
N-P = Non-Participants, n = 12  
TOT = all Subjects, n = 27  
Hallam and Hafner (1978), n = 171
only scored for 'Pain' and not for the stimulus

(Several low frequency responses are not included in the Table.)

'Physical Injury': a summary count of those Subjects who included at least one reference to potential injury or harm

Etiology refers to the frequency of recall of a specific aversive event associated by the Subject with her origin of dental fear.

Onset refers to whether the fear was seen as having begun in childhood (school years) or adulthood (since leaving school).

Familial Fears refers to the frequency of one or both parents or of a sibling having a recognisable ('A lot' or 'Greatly') dental fear.

TABLE 9: SUMMARY OF GENERAL INFORMATION FOR PARTICIPANTS AND NON-PARTICIPANTS

<table>
<thead>
<tr>
<th></th>
<th>PARTICIPANTS</th>
<th></th>
<th>NON-PARTICIPANTS</th>
<th></th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>n = 15</td>
<td></td>
<td></td>
<td>n = 12</td>
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<td>n = 27</td>
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<td>2</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
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<td>7</td>
<td>47</td>
<td>4</td>
<td>33</td>
<td>11</td>
</tr>
<tr>
<td>Dentist</td>
<td>5</td>
<td>33</td>
<td>1</td>
<td>8</td>
<td>6</td>
</tr>
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<td>'Pain'</td>
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<td>40</td>
<td>3</td>
<td>25</td>
<td>9</td>
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<td>73</td>
<td>6</td>
<td>75</td>
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<td></td>
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<td>Traumatic Event</td>
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<td>57</td>
<td>2</td>
<td>18</td>
<td>10</td>
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<td></td>
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<td>57</td>
<td>11</td>
<td>100</td>
<td>19</td>
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<td>Familial Fears</td>
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<td></td>
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<td>1</td>
<td>9</td>
<td>6</td>
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<td>4</td>
<td>29</td>
<td>4</td>
<td>36</td>
<td>8</td>
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</table>

1 More than one Stimulus could be nominated
Table 9 shows that some three-quarters (75 per cent) of all the Subjects reported at least one of the fear stimuli as being the prospect of injury or pain. The most common single fear stimulus was the Drill (48 per cent), followed by the Injection (37 per cent). The Examination itself was a problem for 19 per cent of the Subjects, and Extraction figures in 15 per cent of their fears. The word 'pain' appeared in 33 per cent of the responses (although, of course, it was implied in many more). Loss of Control, especially feelings of helplessness and embarrassment, was a significant factor in the fears of 41 per cent of the subjects. A total of 22 per cent of the subjects thought that their lack of confidence in the dentist or the dentist's manner was a significant contributor to their fears. In 24 per cent of the subjects one or both parents were described as 'a lot' or 'greatly' fearful of dentists, and 32 per cent of the subjects had similarly fearful siblings.

Eight out of the 14 (40 per cent) Participants could trace their origin of the dental fear to a specific traumatic incident. Two of the 11 Non-Participants could do likewise. Examples of such incidences are: 'It was my first filling - dentist hit the nerve and I the ceiling', 'while my grandfather sat on me...the dentist pulled a double tooth without anaesthetic...at 5!', 'I remember a school dentist slapping my face', 'was told I had "terrible teeth which I didn't care about" - which at the time was entirely untrue, but which resulted in a reluctance to suffer more...criticism'.

Onset of dental fear showed a significant difference between the Participants and Non-Participants. All Non-Participants traced the onset of their fear to childhood, whereas only 57 per cent of the Participants did so ($X^2_1=6.21; \ p<.01$).
TREATMENT GROUPS

The two treatment groups, Information and Performance, were compared for Age, Time since last Appointment, Fear Reaction, Self-Efficacy, Confidence, Fear Questionnaire, Pre-Treatment Behaviour Approach Test, and Spielberger State-Trait Anxiety Inventory (State anxiety only). The results are summarised in Table 10. The Information and Performance Groups did not differ statistically on any of the measures.

TABLE 10: PRE-TREATMENT MEASURES FOR INFORMATION AND PERFORMANCE TREATMENT GROUPS

<table>
<thead>
<tr>
<th>AGE</th>
<th>INFORMATION</th>
<th>PERFORMANCE</th>
<th>SIGNIFICANCE</th>
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<tr>
<td>Age</td>
<td>8 38</td>
<td>7 38</td>
<td>n.s.</td>
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<tr>
<td>Last Appointment</td>
<td>8 4.3</td>
<td>7 3.8</td>
<td>n.s.</td>
</tr>
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<td>Fear Reaction</td>
<td>8 66</td>
<td>7 63</td>
<td>n.s.</td>
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<td>Self-Efficacy</td>
<td>8 19.6</td>
<td>7 20.6</td>
<td>n.s.</td>
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<td>Confidence</td>
<td>8 49</td>
<td>7 58</td>
<td>n.s.</td>
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<td>8 47</td>
<td>6 39</td>
<td>n.s.</td>
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<tr>
<td>B.A.T.(^1) (items completed)</td>
<td>8 10.25</td>
<td>7 8.7</td>
<td>n.s.</td>
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<tr>
<td>S.T.A.I.(^2)</td>
<td>6 60</td>
<td>5 62</td>
<td>n.s.</td>
</tr>
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</table>

1 Non-attendance = 0

2 n's are smaller because some Subjects did not attend.

In the Behavioural Approach Test of the pre-treatment Dental Visit, seven out of the eight Information Group subjects attended the dentist, and of those seven, five actually completed the approach hierarchy. In the Performance Group, five out of the seven subjects chose to attend, with three completing the whole hierarchy.
TABLE 11: ATTENDANCE AT THE PRE-TREATMENT
BEHAVIOURAL APPROACH TEST

<table>
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<tr>
<th>SUBJECTS</th>
<th>ATTENDED</th>
<th>DECLINED</th>
<th>COMPLETED ON ATTENDANCE</th>
<th>MEAN ITEMS COMPLETED</th>
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<tr>
<td></td>
<td>n</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
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<tr>
<td>Information Group</td>
<td>8</td>
<td>7 88</td>
<td>1 13</td>
<td>5 77</td>
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<tr>
<td>Performance Group</td>
<td>7</td>
<td>5 71</td>
<td>2 29</td>
<td>3 60</td>
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TWO MONTH FOLLOW-UP

All the Participants were re-contacted two months after their last fear-treatment session. The subjects were asked:

1. whether they had attended a dentist in that time,
2. how they reacted (on a 5-point scale, given the verbal labels of 'much better, better, same, worse, much worse'),
3. whether it was an emergency (e.g., toothache) or a routine check or preventative visit,
4. whether they knew why they did not attend if they did not.

Table 12 summarises the results.

TABLE 12: SUMMARY OF THE TWO-MONTH FOLLOW-UP RESULTS

<table>
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<th>INFORMATION</th>
<th>PERFORMANCE</th>
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<td></td>
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<tr>
<td>Attendance</td>
<td>4 50</td>
<td>3 43</td>
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<td>Non-Attendance</td>
<td>4 50</td>
<td>4 57</td>
</tr>
<tr>
<td>Routine (for attenders)</td>
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<td>3 100</td>
</tr>
<tr>
<td>Reaction ('Better' or 'Much Better')</td>
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<td>3 100</td>
</tr>
<tr>
<td>Reasons Reported for Non Attendance:</td>
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<tr>
<td>Fear</td>
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<td>4 100</td>
</tr>
<tr>
<td>No time</td>
<td>2 50</td>
<td></td>
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</table>
Table 12 shows that four out of the eight subjects in the Information Group (50 per cent) attended a dentist within the two-month follow-up period. Of those four, all did so for routine or non-crisis restorative work, rather than due to an emergency such as a toothache. All of these subjects reported that they felt 'much better' during that visit than they used to feel at previous visits. In the Performance Group, three out of the seven subjects attended a dentist at follow-up (43 per cent), all for non-crisis reasons. Two said they were 'much better' and one was 'better'. All the people who attended completed all the work required at that session.

Of the four non-attenders in the Information Group, two said they were still too fearful, and the other two said they did not yet have the time to do so, and it was not anticipatory fear which had prevented them from doing so. All four of the Performance Group non-attenders said they were still too fearful.

No statistical differences were found. Putting the two treatment groups together, it can be summarised that a total of seven out of the 15 Participants attended a dentist at follow-up (47 per cent), with most of the non-attenders still reporting excessive levels of anticipatory fear.

Six Information subjects and five Performance subjects returned the Programme Evaluation questionnaires. The completion of the Homework and Relaxation assignments was scored for the self-reports in the Programme Evaluation questionnaire. For the written assignments, a score of 1 was given for 'none' ranging to 4 for 'all'. The Information Group averaged 3.5 and the Performance averaged 3.6, with a range in both groups of 3 to 4, that is, between 'most' and 'all'. The self-report of frequency of doing the relaxation exercise was also scored,
with 'less than two per week' being scored 1 and '6 to 7 per week' being scored 4. Both the groups averaged 2.2 (equivalent to doing the exercise two to three times per week).

The Usefulness and Relevancy ratings for the item dealing with the 'Total Programme' showed that the Information Group averaged 3.8 on the Relevancy scale and 3.3 on the Usefulness scale. The Performance Group averaged 3.6 on the Relevancy scale and 2.8 on the Usefulness scale. No statistically significant differences were observed.

Table 13 summarises the pre- and post-treatment scores on the DFS scales for the subjects who returned the Programme Evaluation questionnaires. The Table shows that the Information Group scored significantly lower on the Fear Reaction (High Intensity) scale (Wilcoxon Rank Sum Test, \(p < 0.01\)), significantly higher on the Self-Efficacy scale \(p < 0.001\) and were more Confident in their Self-Efficacy ratings \(p < 0.01\) at the post-treatment assessment. Similarly, the Performance Group was significantly less fearful \(p < 0.001\), showed more Self-Efficacy \(p < 0.001\) and was more Confident in the efficacy rating \(p < 0.001\). In summary, all the Dental Fear Survey scores shifted in a more positive direction at post-treatment when compared to pre-treatment.
<table>
<thead>
<tr>
<th>Event Description</th>
<th>FR (HI) n</th>
<th>S-E n(a’s)</th>
<th>CON (Tot)</th>
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<tr>
<td></td>
<td>INFO</td>
<td>PERF</td>
<td>INFO</td>
</tr>
<tr>
<td></td>
<td>Pre Post</td>
<td>Pre Post</td>
<td>Pre Post</td>
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<tr>
<td>1. Thinking</td>
<td>0 0 0 1</td>
<td>5 6 3 5</td>
<td>9 9 8 9</td>
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<tr>
<td>2. Calling</td>
<td>0 0 0 2</td>
<td>5 6 4 5</td>
<td>11 9 11 9</td>
</tr>
<tr>
<td>3. Driving to</td>
<td>1 0 0 1</td>
<td>6 6 4 5</td>
<td>15 12 8 10</td>
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<tr>
<td>4. Approaching office</td>
<td>0 0 4 2</td>
<td>6 6 4 5</td>
<td>14 11 10 9</td>
</tr>
<tr>
<td>5. Waiting room</td>
<td>0 0 3 2</td>
<td>6 6 4 5</td>
<td>11 11 14 9</td>
</tr>
<tr>
<td>6. Smell</td>
<td>1 0 3 1</td>
<td>6 6 4 5</td>
<td>9 8 13 8</td>
</tr>
<tr>
<td>7. In surgery</td>
<td>2 0 4 2</td>
<td>5 5 4 5</td>
<td>11 9 11 8</td>
</tr>
<tr>
<td>8. Lying on the chair</td>
<td>2 0 4 2</td>
<td>5 5 4 5</td>
<td>12 10 12 9</td>
</tr>
<tr>
<td>9. Dentist approaching</td>
<td>3 0 5 1</td>
<td>6 6 4 5</td>
<td>9 10 10 8</td>
</tr>
<tr>
<td>10. Preparing instruments</td>
<td>1 0 4 2</td>
<td>6 6 4 5</td>
<td>10 9 10 9</td>
</tr>
<tr>
<td>11. Opening mouth</td>
<td>2 0 4 2</td>
<td>6 6 4 5</td>
<td>13 10 12 9</td>
</tr>
<tr>
<td>12. Probe and mirror</td>
<td>3 0 4 1</td>
<td>5 6 4 5</td>
<td>15 9 13 10</td>
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<td>13. Mention injection</td>
<td>3 0 4 3</td>
<td>5 6 4 5</td>
<td>13 8 10 9</td>
</tr>
<tr>
<td>14. Needle into mouth</td>
<td>3 0 3 3</td>
<td>6 6 4 5</td>
<td>14 8 11 10</td>
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<tr>
<td>15. Prick of needle</td>
<td>3 0 3 3</td>
<td>6 6 4 5</td>
<td>15 11 10 8</td>
</tr>
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<td>16. Mention of drill</td>
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<td>6 6 4 5</td>
<td>14 13 12 9</td>
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<td>17. Drill into mouth</td>
<td>6 3 3 1</td>
<td>4 6 4 5</td>
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<td>18. Hearing drill</td>
<td>6 3 3 1</td>
<td>4 6 4 5</td>
<td>14 14 16 10</td>
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<td>19. Drill grinding</td>
<td>6 4 4 2</td>
<td>4 6 4 5</td>
<td>14 17 13 10</td>
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<tr>
<td>20. Gagging on saliva</td>
<td>5 1 2 1</td>
<td>5 6 4 5</td>
<td>16 9 12 9</td>
</tr>
<tr>
<td>21. Mention extraction</td>
<td>3 3 3 3</td>
<td>6 6 3 5</td>
<td>16 24 12 8</td>
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<tr>
<td>22. Pliers gripping</td>
<td>3 3 3 3</td>
<td>4 6 3 5</td>
<td>16 14 12 8</td>
</tr>
<tr>
<td>23. Worry about pain</td>
<td>5 4 3 2</td>
<td>3 6 3 5</td>
<td>15 12 12 7</td>
</tr>
<tr>
<td>24. Feeling tooth moved</td>
<td>4 4 5 3</td>
<td>5 6 4 5</td>
<td>12 16 13 8</td>
</tr>
<tr>
<td>25. Tooth pulled out</td>
<td>4 4 5 3</td>
<td>5 6 4 5</td>
<td>12 16 12 8</td>
</tr>
</tbody>
</table>

n = 6 5 6 5 6 5 6 5 6 5 6 5
DISCUSSION

THE SUBJECTS

The high drop-out rate observed in this study (only 15 completing the whole programme after 34 enquiries) reflects the approach-avoidance ambivalence of persons suffering from excessive levels of dental fear but who recognise that they are in need of dental care. A comparison of the 15 Participants (those who completed the programme) with the 12 Non-Participants (those who returned the pre-treatment assessments but did not continue with the fear treatment) shows that the Non-Participants

- had a longer modal length of avoidance
- were somewhat younger
- reported a higher frequency of High Intensity Fear Reactions
- had a lower level of Self-Efficacy and were less Confident about their efficacy ratings.

Alternately, the Participants could best be described as possessing a moderate, but nonetheless excessive, fear of the dental situation (sufficient to cause them to avoid non-emergency dental treatment).

A significant feature of both the Participant and Non-Participant groups is the preponderance of female subjects. The high rate of females seeking treatment of other types of clinical fears has been observed (Marks, 1969). This may be a function of the cultural stereotypy which inhibits males from admitting fear and seeking help for its treatment. When approached in surveys (e.g., Kleinknecht, Klepac and Alexander, 1973; Kleinknecht and Bernstein, 1978;
Wardle, 1982) males have admitted high levels of anxiety in the dental situations, although they tended to report lower levels than females.

Findings of Shoben and Borland (1954), Lautch (1971) and Wardle (1982) dealing with the origin and causes of dental fears are supported in this study. A total of 24 per cent of subjects reported high levels of dental fear in their parents, and 32 per cent reported high levels of dental fear in siblings. Furthermore, it was noted that 100 per cent of the Non-Participants reported onset of dental fear in childhood, as compared to 57 per cent in the Participants. The relationship between age of onset and the greater self-report of fear already observed in the Non-Participants is worthy of further study.

A somewhat surprising finding was that 57 per cent of the Participants recalled a single traumatic event which they considered the precipitant of their fear, but only 18 per cent of the Non-Participant group did so. Given the Non-Participants' higher level of avoidance and greater level of fear, the role of denial and suppression may be hypothesised. Tullman et al. (1979) has already observed that some dental patients appear to employ denial as a coping mechanism when seated in the dental chair. On the other hand, the poorer recall of a precipitating event in the Non-Participants may be an artifact of earlier age of onset.

Of more clinical importance is the nature of the stimuli which makes dental treatment a fearful situation. In the Fear Reaction scale the items dealing with drilling, extraction and fear that the anesthetic would wear off (i.e., fear of pain) were most frequently nominated. In the open-ended question of cause of fear in the General Information questionnaire, a total of 74 per cent of the subjects reported fear of injury as being one of the things which made dental attendance difficult for them. Other stimuli reported
included fear of loss of control, including embarrassment over own reactions, and a dislike of the dentist's chairside manner.

THE TREATMENT

The two-month follow-up found that four out of the eight (50 per cent) Information group members sought dental treatment. They all did so for routine prophylactic and restorative work rather than for emergency reasons (typically a moderate to severe toothache). All four of these people reported being 'much better' during the follow-up attendance than before doing the fear programme. The Performance group showed dental attendance in three of the seven subjects (43 per cent), with two of the three saying they were 'much better' and the other saying she was 'better'. All of the Performance subjects went for non-emergency reasons. The success rates of both the treatments is in accord with systematic desensitisation but not as high as self-modelling (Shaw and Thoresen, 1974).

No difference in outcome results for post-treatment dental attendance was observed between the two treatment groups. This suggests that the application of the coping skills to an analogue pain stimulus (cold pressor) and practice in imagination (cognitive rehearsal) added nothing to the effectiveness of the educational and coping skills learning of the Information group. The implications of this finding is that when fearful people learn the coping skills well they are themselves able to generalize these skills to the fear-provoking situations without requiring the added practice of application training.

The Self-Efficacy scores shifted towards the positive end of the continuum as predicted by the self-efficacy theory (Bandura, 1977; Biran and Wilson, 1981). However, the shift occurred in both the
subjects who attended the dentist, and in the ones who were unsuccessful in doing so. This apparent dysynchrony may have been due either to the fact that efficacy expectations and behaviour are not related, or that the Self-Efficacy scale used in this study was inadequate. The scale used here failed to distinguish to the subject between the efficacy expectancy of attending a dentist and the efficacy expectancy of his behaviour once he got there. Indeed, the instruction for this scale seems to emphasise the behaviour once in the situation, so that it is unfair to use this as a predictor for attendance.

The observed shift in the Self-Efficacy scores, as well as the positive shift in the Confidence scores can be taken, at the very least, as implying that the subjects who had undergone treatment had developed a more accepting and confident attitude to dentistry, even if not positive enough to permit them to attend one.

An apparently anomalous result which needs to be considered is the attendance rates at the pre-treatment Dental Visit and at the two month follow-up. In the Information group, seven subjects (88 per cent) attended the dentist at pre-treatment, with five of the seven (77 per cent) completing the required procedure for the session. At the follow-up, only four subjects (50 per cent) attended, all completing the procedure. Similarly, 71 per cent of the Performance Group attended at pre-treatment with 60 per cent of those completing the required procedure, but only 43 per cent attending at the follow-up. The inconsistency can be explained in terms of the instructions given for each occasion and in terms of the expectations held by subjects at each occasion. Although the subject's choice of attendance or non-attendance was stressed at the pre-treatment Dental Visit, with no penalty or criticism involved, it was explained to the subjects as a first step
in the total programme and as a 'real-life' test of their fears. It is likely that the subjects interpreted this as a type of pre-requisite for entry into the fear treatment programme. In fact, one subject volunteered in the Programme Evaluation said that she felt 'coerced' into attending and resented this. An additional factor which might have made attendance at pre-treatment easier for the subject was that an appointment day and a nominated dentist was given to them (although they still had to contact the dentist to make a time booking). It might be noted here that many subjects reported that making the initial appointment was the point of most acts of avoidance, but that having made one, they generally went through with the visit. This was reflected in the high Self-Efficacy scores (of completing treatment once in the dental surgery), but poor attendance rate at post-treatment.

Two factors made it easy for the subjects to decline from attending at post-treatment. One was that the invitation was couched in terms of a 'recommendation' to attend 'as soon as possible to gain maximum benefit from the programme'. Clearly the expectancy instilled in the subjects by the post-treatment instruction was much lower than by the pre-treatment request. Secondly, no appointment date was set and no dentist was nominated. The subjects had to initiate their own contact with a dentist of their own choice (which could be the same one). No time limit was set, although the subjects were told that a follow-up contact would be made in approximately one month.

It is, of course, possible that the drop in attendance rates was a real phenomenon rather than an artifact of different instructions. The pre-treatment Dental Visit and the total programme may have actually increased the subjects' fear of dentistry. The subjects had the right to expect a less aversive visit to the dentist at the pre-treatment; perceiving it as being part of a fear reduction programme carried out by a dentist skilled in that specialty. In reality
this was partly correct, with the nominated dentist proceeding in a standardized manner aimed at minimizing the subjects' anxieties. However, there are aspects of dentistry which people find aversive (e.g., sound of drill) which cannot be eliminated from dental practice. It is possible that these anxious subjects were disappointed by the fact that this first contact with the programme was still aversive to them, and thus lost trust in the Experimenter and the programme as a whole. Their expectations of the programme, and thus their self-efficacy, could have been lowered at this point. The use of pre-treatment Behavioural Approach Tests in situations where the fear stimuli cannot be fully controlled may be inappropriate, or even counter-therapeutic. A more therapeutic procedure may be to omit a pre-treatment B.A.T., and to use a stronger instruction for the post-treatment attendance, by which time the subjects could rely on the fear-management technique to lower the subjective aversiveness of the situation, maximizing the possible for a positive experience and raising their self-efficacy perceptions, which would lead to a greater likelihood of their attending a subsequent dental treatment, even in the absence of a therapist instruction. This raises certain methodological difficulties. That is, if the pre-treatment B.A.T. is an inappropriate baseline measure with which to evaluate the effectiveness of the treatment, then what is to replace it? In this study, two facts must be recalled:

1. the subjects were initially defined on the criteria of dental avoidance due to fear, and
2. the mean length of dental avoidance was found to be 4.0 years, with all subjects indicating they had dental work which they knew needed to be done.

Given these two pieces of data, the fact that a total of 47 per cent of the subjects attended a dentist, on their own initiative, within
a two-month period, in the absence of any emergency, begins to reach a clinically meaningful outcome.

The fact that a total of 13 subjects attended the pre-treatment Dental Visit, but only a total of seven attended a dentist at follow-up, has implications for the therapeutic processes involved in overcoming fear. The exposure to the relatively ideal dental procedures used in the Dental Visit (special dentist/patient rapport, a slow pace geared to the patient's own preparedness to proceed) was not enough to help those subjects overcome their initial fear. Obviously, a single exposure would not be enough to create a significant effect. But there remains the strong possibility that exposure is only successful if the person is first given coping techniques to use in the feared situation. That is, mere exposure, even in a controlled and ideal situation, is not sufficient to overcome fear. The possession of coping skills may be a necessary pre-condition, with exposure perhaps enhancing the speed of unlearning the fear response and raising self-efficacy.

The self-report measures of Fear Reaction and Self-Efficacy showed shifts towards the positive end at post-treatment assessment. This shift was observed fairly uniformly in both the attenders and non-attenders. The dysynchrony between the self-reports and final behaviour has been observed before (Marks, 1969). In this context it might be interpreted as meaning that although the level of fear of the subjects had actually dropped, it had not dropped sufficiently to overcome their major hurdle of making the dental appointment in the absence of a strong motivator (such as pain or a positive instruction). Also, in clinical practice, a brief booster session may lead to better results by reinforcing the subject's shift in attitude and offering
a chance to review those aspects of therapy most relevant to the individual.

**IMPLICATIONS FOR THE CLINICAL PRACTICE OF DENTISTRY AND PSYCHOLOGY**

The treatment approach described in this study offers benefit to approximately half the persons seeking help in overcoming their excessive fear of dentistry. The person most applicable for this intervention is one with an excessive, but not extreme, fear reaction to the dental setting. Freidson and Feldman (1958) found that approximately 5 per cent of their sample actively avoided dental treatment because of fear. Relating those figures to the Australian population, it can be estimated that some 500,000 Australian adults avoid dental treatment until the pain reaches unbearable proportions for them. No opportunity for preventive or early treatment is possible for these persons, and they typically undergo frequent extraction or massive treatments, leading to both personal and financial hardships (Roistacher, 1977).

Help for this group of people can be initiated at two points in time. Firstly, special dental fear programmes can be run in non-dental settings, much like the stress-reduction clinics run in community health centres. The techniques and Info Packs used for the Information group here could serve as a basis of such programmes. Such a treatment could be extended by adding extra sessions to cater for the individual needs of the clients who do not find the programme sufficient. The Information package could be presented in no more than 4 one-hour sessions with one or two extra one-hour sessions added on. The total involvement of 6 one-hour sessions is similar to the ubiquitous relaxation therapy groups run in many health centres.
Secondly, a most important point of intervention is in the dental surgery. It is noted that even severely fearful people attend a dentist in a crisis. Technological advances in dentistry have done a great deal to minimize the aversiveness of dental procedures. What the dentist is confronted with now is the patient who arrives with a disproportionate anticipation of fear (Wardle, 1982) but whose anxiety is so high that he will not appreciate that the procedure was actually less painful than he anticipated, thus not allowing him to experience a corrective situation. The dentist must be able to restructure the environment and help the patient reduce his excessive fear so as to allow the patient to unlearn his previous traumatic associations.

The dentist would need to be aware of the patient's high level of subjective anxiety, and adjust his procedures and chairside manner in order to allow the fearful patient to feel more reassured and confident. The dentist must establish an effective rapport with the fearful patient to instil trust and prevent the patient from projecting his own anger over his perceived inadequacy onto the dentist (as evidenced in the high frequency of blaming of dentists for the causing of fear).

Two practical issues add to the complexity of the dentist in trying to help the fearful patient: one is the fact that fearful patients often only attend treatment when they are in considerable pain. The dentist may have no choice but to instigate extensive work or the more aversive types of work (e.g., extractions) before being able to establish a trusting relationship with his patient. Secondly, it is often difficult to actually recognise the deeply fearful patient, as many highly anxious patients do not exhibit outward signs of their inner stress (Kleinknecht and Bernstein, 1978; Roistacher, 1977).
A short introductory interview with a new patient, or perhaps a brief dental fear survey, may help the dental practitioner to become alerted to any underlying fear. The dental profession may need to place a greater emphasis on the study of the psychology of human stress reactions and emotional behaviour (Lindsay et al., 1982).

Although the absence of appropriate expertise and the constraints of a busy practice would make it impractical for a dentist to contemplate the application of a comprehensive dental fear programme, it would seem appropriate that the dentist at least attempt to reduce the patient's immediate anxieties by carrying out the following suggestions:

1. recognize the patient's fear;
2. establish rapport with the patient;
3. help the patient to acknowledge his or her anxieties;
4. work at the patient's pace:
   (a) explain in detail all the procedures to be used
   (b) explain to the patient what to expect to feel
   (c) restore a sense of control to the patient by pre-arranging a 'stop' or 'slow down' signal (e.g., Corah, 1973: Kanfer and Seidner, 1972)
5. eliminate extraneous and unnecessary stressors by minimizing distractions, noises, and other sensory inputs;
6. continually reassure the patient that he or she is being understood and not to feel embarrassed or ashamed at being afraid. Reassure the patient that the bodily symptoms he or she is feeling are normal reactions to dental anxiety and are not dangerous;
7. the dentist/patient relationship, like any relationship, is
a reciprocal exchange of mood and emotion. It is imperative that the dentist remains calm and confident. This calm and self-assurance will be transmitted to the patient, who is more likely to respond in a like manner.

There is, of course, no guarantee that these precautions will allow a fearful patient to feel relaxed in the dental surgery. However, it should lessen the degree of aversiveness of the situation and inhibit the reconditioning of the noxious stimuli with the setting. Furthermore, having established an effective rapport with the patient, a referral to a comprehensive dental fear programme could be made.

The programme described here was effective in helping about half the subjects. As such, it solves part of the needs of the potential clientele. It must be remembered by the clinician, that this study was conducted within the constraints of experimental methodology, with its attempt to control as many independent variables as possible. The resultant tidiness of presentation meant that little opportunity to individualise the content, pace or depth of presentation could be made (Barlow, 1981). In clinical practice, a more flexible approach can be used, tailoring the various techniques to individual needs and styles. For example, Klepac (1975) could return to his non-successes and present an alternate therapeutic procedure.

This study did not take into account such organismic variables as locus of control and pain tolerance and threshold, nor learning differences such as the exact fear stimuli. The recognition of these variables would permit a more precise and accurate selection of the most appropriate treatment strategy for each individual client out of the list of demonstrated therapies - de-conditioning (e.g., systematic desensitisation), behavioural 'coping skills training', cognitive 'education, cognitive restructuring, modelling', or combinations
of these (e.g., the Information programme used in this study).

One last task that remains for both dental and psychological practitioners is how to reach the substantial number of people who have a severe fear of dentistry, so great that they avoid any thing which hints of dentistry, including programmes to eliminate the fear itself. The answer to this might be found in further research into the method of individualising dental fear treatment, and finding the approach which least confronts the person with his own fears.
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DENTAL FEAR PROJECT

A research project on FEAR OF DENTISTRY IN ADULTS is being conducted by Mr David Zilber in the Department of Psychology at the Australian National University. This project aims to help people who need or would like dental work, but whose fear keep them from seeing a Dentist.

If you fit this description and are over 18 and wish to enquire about participation in the project, please write to David Zilber, Dental Fear Project, A.N.U., P.O. Box 4, Canberra 2600 - or telephone (02/492795/492796, Business Hours: 886166 After Hours), mention the Dental Fear Project, and leave your name and address.

FEAR OF DENTISTS IS MASTER'S PROJECT

If YOU are over 18 and fearful of visiting the dentist, even when you have a terrible toothache, then ANU post-graduate student Mr David Zilber would like to hear from you.

As part of his work for his master's degree in clinical psychology he is conducting a research project on fear of dentistry in adults.

"The basic idea I'm working on is that a great many people avoid going to the dentist because of the pain they associate with it," Mr Zilber said.

"In many cases, it is a very rational, very real fear for these people, and is often complicated by anxiety. If people become anxious, then a small amount of pain can be magnified into a large amount."

Mr Zilber is seeking at least 20 people who would like to have dental work done but whose fears prevent them from seeing a dentist.

He plans to look at the history of people's fear, when it first began, and their reactions to different parts of dentistry, such as making an appointment, sitting in the dentist's chair or hearing a drill.

He will also discuss documented psychological treatment of phobias, and then ask the subjects to make an appointment and visit a dentist to assess the effectiveness of the treatment.

Anyone wishing to inquire about taking part in the project should write to Mr Zilber, Dental Fear Project, ANU PO Box 4, Canberra, or telephone 492795 or 492796 during business hours or 886166 after hours.
**APPENDIX 2**

<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE</th>
</tr>
</thead>
</table>

**INSTRUCTIONS:**

1. Think of yourself having to face dental treatment. You are faced with the situations described below.

2. In the block called **FEAR REACTION**, circle the most appropriate number from 0 to 4.

3. In the block called **EXPECTATION**, circle the most appropriate letter a or b. Then circle the most appropriate number on the scale ranging from 1 to 5 depending on how sure you are of a or b.

4. Thus, at the end, you should have three circles against each statement.

***************

1. Thinking about having to go to the dentist.
2. Calling for an appointment.
3. Driving to the appointment.
4. Approaching the office door.
5. Sitting in the waiting room, waiting to go in.
6. Smelling the dentist's room.
7. Hearing the nurse call you into the surgery.
8. Lying in the dentist's chair.
9. Seeing the dentist approach you.
10. Seeing the dentist and nurse preparing the instruments.

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**FEAR REACTION**

<table>
<thead>
<tr>
<th>NONE or LITTLE</th>
<th>SOME</th>
<th>ALLOT</th>
<th>HANDS SHAKING</th>
<th>GREAT</th>
<th>SWEAT PONDSING</th>
<th>EXTREME</th>
<th>HEART POUNDING</th>
<th>GASping for air</th>
<th>How sure is your answer of a or b</th>
<th>I don't really know what would happen</th>
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<tbody>
<tr>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>a</td>
<td>b</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
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<td>b</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
11. Hearing the dentist telling you to open your mouth wide.  
12. Feeling the probe and mirror in your mouth.  
13. Hearing the dentist tell you he is going to give you an injection.  
14. Feeling the needle being put into your mouth.  
15. Feeling the prick of the needle in your gum.  
16. Hearing the dentist tell you he is going to use the drill.  
17. Feeling the drill being put into your mouth.  
18. Hearing the drill whirring inside your mouth.  
19. Feeling the drill grinding in your tooth.  
20. Feeling as if you will gag on your saliva.  
21. Hearing the dentist tell you he is going to pull out your tooth.  
22. Feeling the pliers grip your tooth.  
23. Imagining that the anesthetic will not stop the pain.  
24. Feeling your tooth being moved about by the pliers.  
25. Hearing and feeling the grinding as your tooth is being pulled out.

<table>
<thead>
<tr>
<th>None or Little</th>
<th>SOME &quot;butterflies&quot;</th>
<th>A LOT; knots in stomach, hands shaking</th>
<th>GREAT; heart racing, sweaty palms</th>
<th>EXTREME; heart pounding</th>
<th>How sure is your answer of a or b</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>a</td>
</tr>
</tbody>
</table>
### FEAR QUESTIONNAIRE

**PART A**

**INSTRUCTIONS:** To what extent do you fear the following? Circle the most appropriate number.

---

<table>
<thead>
<tr>
<th></th>
<th>Makes me uneasy but I don't avoid it</th>
<th>Great fear, I always avoid it</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Going into the street or open places
2. Going shopping
3. Travelling by underground train
4. Travelling by surface train.
5. Travelling by ship
6. Travelling by bus
7. Travelling by car
8. Travelling by plane
9. Crowded shops
10. Pictures, theatre, church
11. Tunnels
12. Football matches
13. Lifts
14. Going to the hairdresser
15. High places
16. Bridges
17. Deep water
18. Having a bath
19. Dogs
20. Cats
21. Snakes
22. Worms
23. Bees or wasps
24. Rats or mice
25. Spiders
26. Birds
27. Speaking or acting to an audience
28. Being stared at
29. Meeting someone of the opposite sex
30. Meeting authority
31. Arguing with someone
32. Being criticized
33. Signing your name in front of someone
34. Going to parties
35. Eating or drinking with other people
36. Talking to someone you don't know well
37. Seeing others vomiting or vomiting yourself
38. Hospitals
39. Germs
40. Surgical operations
41. The sight of blood
42. The thought of dying

---
<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>43. Sharp objects (needles, knives, glass)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Being mentally ill</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>45. Fear of suffocation</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>46. Going to the dentist</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>47. Fainting</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>48. Fear of certain illnesses</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>49. Heart stopping</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>50. Thunder and lightning</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>51. Strong winds or storms</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>52. Darkness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>53. Being left alone for a few hours</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>54. Failing in some task or exam</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>55. Urinating in public toilets</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
APPENDIX 4

GENERAL INFORMATION

Name __________________________ Age _____ Sex M F

Address ___________________________________________________________

Phone : Bus. _________ Home ________________________________

Date of last dental treatment (approximate) ____________________________

Describe the state of your teeth now ___________________________________

What work would you want done on them urgently ________________________

Have you had a toothache as an adult YES NO

If YES, did you go to the dentist each time YES NO

If NO, (a) how great was the worse ache when you did not go MODERATE SEVERE

(b) How long did it last ____________________________________________

Describe, in detail, what it is about dentistry that makes it hard for you to attend __________________________________________

__________________________________________________________________

__________________________________________________________________

__________________________________________________________________
When did you first begin to have the above difficulties

What, if anything, happened

How fearful of dentistry were your:

<table>
<thead>
<tr>
<th></th>
<th>NONE</th>
<th>SOME</th>
<th>A LOT</th>
<th>GREATLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brothers/Sisters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other close person/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you know of any medical conditions which complicate dental work in you

YES  NO

If YES, what

What have you done until now to help you cope with dentistry

What do you hope to get from this Project

Signature

Date
APPENDIX 5

BEHAVIOURAL APPROACH TEST -- Procedure

A. Pre - BAT

1. The psychologist discussed the concept of a BAT as a "real-life" measure of intensity of fear.

2. Subjects were informed emphatically that they would not be forced to undergo any treatment they did not wish on the day.

3. Subjects were informed emphatically that, should they agree to attend, they will have total control over the situation and would be able to terminate the procedures at any sign of personal distress.

B. BAT

1. Subject were met by the psychologist at the waiting room of the dental office. Two things were done here:
   (a) the Subject's agreement was checked and control over the session was re-emphasised,
   (b) the S.T.A.I. Form X-1 was completed.

2. The dental assistant asked the Subject to enter the surgery (the psychologist remained in the waiting room).

3. The Dentist introduced himself and established basic rapport.

4. The Dentist again reminded the S that she can terminate the session whenever she becomes stressed, and not to feel embarrassed or guilty about doing so. A signall was agreed upon.

5. The Dentist proceeded up the BAT Hierarchy (Steps 3 to 14), seeking the S's permission to perform the next step, and periodically reminding the S that she is free to terminate at any time.

6. An example of permission seeking is: "I want to put the probe into your mouth and lightly scrape some stuff away. Is that all right for me to do?" (Step 8).

7. An example of a reminder is: "Don't forget that you can stop the session whenever you've had enough".

8. The Dentist terminated the session himself if he thought that the S was actually experiencing severe distress, even if the S did not signal so.

9. If the S needed urgent dental work other than the ones appearing on the hierarchy, she was asked if she wanted this done as well in that session, but the hierarchy was maintained.

10. No chemical or psychological stress reducing techniques were used by the Dentist or psychologist at this time.
C. Post-BAT

1. If the S completed the 14 Steps of the BAT, the need for further psychological treatments was discussed. If the S still wanted the treatment, she was included.

2. If the S failed to complete the 14 Steps, she was automatically included in the psychological treatments.

D. The BAT Hierarchy

1. Making the appointment
2. Going into the waiting room
3. Entering the surgery
4. Sitting on the chair (upright)
5. Lying down on the chair
6. Putting on the bib
7. Putting on the overhead light
8. Putting in the mirror
9. Putting in the probe: light examination
10. Putting in the probe: major examination
11. Topical anaesthetic
12. Injection
13. Drilling
People are made up of many emotions—both pleasant and unpleasant. We always try to get more of the pleasant emotions and try to avoid the unpleasant ones. In fact, the bigger the unpleasantness, the greater the avoidance. In this Project, we will be concentrating on two unpleasant emotions, Fear and Pain. A related emotion, Anxiety, will be mentioned briefly. Eventually, though, we will be looking at the pleasant emotion of Success.

FEAR
Fear is the natural reaction of the body to the threat of danger. That is, Fear occurs when a person feels threatened with something dreadful. Fear reactions occur in the mind ("Watch out!") and in the body. The body reaction is one of readiness for 'Fight or Flight'. Here, the body's reflexes prepare it for defending itself against the threatened danger:

Perception of danger → Nervous system prepares for fight or flight → Body and mind are put into a state of readiness

Most of the bodily symptoms we experience when frightened are due to certain biological changes that occur in our bodies, such as:
- increase in adrenalin flow
- increase in heart rate and breathing
- diversion of blood from internal organs to muscles.

These changes are rapid and mostly beyond conscious control. They are fully reversible when the danger is gone. However, they are very powerful when they do happen and can be frightening in themselves.

PAIN
Pain is the body's message that some sort of physical damage is being done to it. Pain is actually the brain's interpretation of a signal it receives from the pain nerve when that nerve is stimulated by an injury. Pain serves as a cue to do something to stop further damage. For example, when you burn a finger, the process goes like this:

FINGER → PAIN NERVE → BRAIN → BODY

Burn → "Damage" → "Hurt" → Takes finger away
ANXIETY

Although the term 'Anxiety' is used by every person, it is a very difficult word to define. One definition is "a vague fear". Anxiety and Fear are very similar in the way they effect the body. The major difference is that Fear usually relates to a specific event (eg. snakes, exams) whereas Anxiety is a general level of tension of mind and body which is difficult to pin down to any particular event. Anxious people tend to say things like "I'm afraid of something happening, but I don't know what", where Fearful people say "I'm afraid that I'll be hurt by this thing." In this Project, the terms Fear and Anxiety will be used interchangeably.

MEASURING EMOTIONS

Height is easy to measure - you use a ruler. If you are interested in comparing heights, you just stand people up and arrange them from tallest to shortest. Can this be done with emotions? You probably cannot measure emotions by using a 'ruler', but it is possible to get some idea of an ordering of the intensity of emotions from High to Low by ordering the words that are commonly used for these emotions. Such arrangements are individual, and below is my ordering for two unpleasant and one pleasant emotions:

FEAR            PAIN            HAPPINESS
Terror          Excruciating  Ecstasy
Panic           Agony          Joy
Afraid¹         Hurt           Pleasure
Apprehension    Ache           Cheerful
Nervousness     Smart          Gladness
Unease          Discomfort     Comfort

You may want to draw up your own list for these or other emotions. This list may be useful for you later when you try to estimate any changes you may feel in Fear and Pain following the end of the Programme.
SYMPTOMS OF FEAR/ANXIETY

A survey of combat airmen done during World War II found that they experienced the following symptoms during actual missions:

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>% OF MEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pounding heart</td>
<td>89</td>
</tr>
<tr>
<td>Very tense muscles</td>
<td>83</td>
</tr>
<tr>
<td>Irritability, anger</td>
<td>80</td>
</tr>
<tr>
<td>Dryness of mouth or throat</td>
<td>80</td>
</tr>
<tr>
<td>&quot;Cold sweat&quot;</td>
<td>79</td>
</tr>
<tr>
<td>&quot;Butterflies&quot; in the stomach</td>
<td>76</td>
</tr>
<tr>
<td>Sense of unreality (that this could not be happening to you)</td>
<td>69</td>
</tr>
<tr>
<td>Need to urinate frequently</td>
<td>65</td>
</tr>
<tr>
<td>Trembling</td>
<td>64</td>
</tr>
<tr>
<td>Confusion, being rattled</td>
<td>53</td>
</tr>
<tr>
<td>Weakness or faintness</td>
<td>41</td>
</tr>
<tr>
<td>Unable to remember details of what happened</td>
<td>39</td>
</tr>
<tr>
<td>Sick to the stomach</td>
<td>38</td>
</tr>
<tr>
<td>Unable to concentrate</td>
<td>35</td>
</tr>
<tr>
<td>Wetting or soiling pants</td>
<td>5</td>
</tr>
</tbody>
</table>

These symptoms, and others, can be found in people facing any kind of Fear situation. These are the side effects of the main biological changes which occur to the body in the 'fight or flight' state.
Emotions can be ____________ or un______________.
Two unpleasant emotions are _________ and __________. One pleasant emotion is ____________.

Fear is the body's reaction to the ______ of __________.
The body experiences an increase in ______ flow, ____ rate and b__________. These reactions occur rapidly/slowly (Circle one).

Pain is the signal that ____________ damage is being done.
The signal travels along the _____ nerve till it reaches the _____.

Anxiety is like ____. Anxiety is vague/specific. Fear is vague/specific. What other things do you fear? ______________________

You can measure height by
1. ______________________________
2. ______________________________ from tallest to shortest.
You can best measure emotions by _________________________________.
Complete the columns on page 2 for Fear, Pain and a pleasant emotion of your choice.

It is natural/unnatural to feel Fear in certain situations. The most common symptoms you experience in dental situations include:
1. __________________________ 5. __________________________
2. __________________________ 6. __________________________
3. __________________________ 7. __________________________
4. __________________________ 8. __________________________

Fear symptoms are side effects of the '______________' state.
THE PSYCHOLOGY OF FEAR AND PAIN

As you may have gathered from Info Pack 1, Fear and Pain are composed of two components, physical and mental:

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>FEAR</th>
<th>PAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>An event in the physical world</td>
<td>Threat of physical injury</td>
<td>Actual physical injury</td>
</tr>
<tr>
<td>The mind's interpretation of the above event</td>
<td>&quot;I will be hurt&quot;</td>
<td>&quot;It hurts&quot;</td>
</tr>
</tbody>
</table>

In order for a person to experience the emotions of Fear and Pain, both components A and B must occur together. What it means is that the intensity of Fear depends on the size of the physical threat and on the mind's interpretation of the seriousness of the threat; and the intensity of Pain depends on the size of the injury as well as the mind's interpretation of the seriousness of the signal in the pain nerve. It is the influence of the mind's interpretations of the physical events that we will be discussing as the psychology of Fear and Pain.

THE PSYCHOLOGY OF INTENSITY OF FEAR

Several psychological factors influence the person's interpretations of the severity of the physical threat:

1. Individual differences: People seem to inherit different levels of reactivity to signs of danger, just as different people have individual reactions to loud noises.

2. Previous experience: A previous bad experience with an object will make the person more sensitive ("nervous") in its presence. For example, being bitten by a large dog may make you apprehensive of large dogs in the future.

3. Expectation: If we expect dreadful things to happen in a certain place, then when the threatening event finally occurs, even if it is mild, it will be interpreted as more dangerous than it really is. For example, if we expect to do badly in an examination then our fear of it builds up days in advance, so that by the time the exam comes and we see the paper, our fear levels reach an extreme high. On the other hand, if we expect to pass, we do not fear it at all, and the sight of the paper may only raise very slightly our anxiety level, if at all. The irony is that the extreme fear and anxiety actually stop us from performing well in the exam by increasing confusion and lowering concentration (see Symptoms of Fear).

4. Loss of Control: People feel most secure if they believe that they are in control of the events around them and in control of their own bodies. When danger threatens the belief that the threat is beyond our control makes the threat appear even more fearsome. Perception of
oss of control occurs when:

(a) we believe that the danger is too great for us to cope with;
(b) we believe that our own bodies will not cope with the stress associated with the fear symptoms at the time;
(c) when we have come to feel totally helpless in a situation due to repeated failures on previous occasions, such as repeatedly undergoing a traumatic time at the dentist's;
(d) when we are surprised by the appearance of the threat and have not been able to prepare ourselves psychologically for it, e.g. suddenly seeing a car appear out of the corner of our eyes. On the other hand, surprise may sometimes work for us because it stops the 'stewing over' that goes on when we know we have to face a threatening event later on.

THE PSYCHOLOGY OF THE INTENSITY OF PAIN

Most people assume that the amount of Pain a person feels is directly related to the severity of the physical injury. However, research shows this is not the case. As with Fear, the person's mental attitude to the injury suffered, as well as the actual size of it, determine the amount of Pain the person finally perceives.

For example, imagine yourself playing basketball or football in an important competition game. You are totally engrossed in the game - all psyched up to do your best. Your total concentration is on the game. You are exhausted and bothered, but give all to the team. Suddenly you trip and twist your ankle. It hurts for an instance....but you get up and play on. Soon you forget the pain and keep going. It is only afterwards that you remember the twist and it starts hurting again.

Now imagine yourself at home. You trip on the back step and twist your ankle. You lie on the ground nursing the ankle and groaning in pain. You may hobble inside and lie down waiting for the pain to subside. You may take a bunch of pain killers, but notice how in this example the pain stays with you and limits your mobility.

As with Fear, there are psychological factors which influence the perception of Pain:

1. Individual differences: Some people seem to be born with a greater ability to withstand Pain than others. In addition, different cultural groups differ in the amount of Pain they permit themselves to stand before they express their distress: e.g. Anglo-Saxons typically force themselves to maintain a "stiff upper lip", and refuse to acknowledge the emotion of Pain. Consequently, when Pain does confront them, they do not know how to cope with it as if they lacked practice in doing so. This can also be seen if the differences between pain tolerance between men and women: men are taught not to express emotions, especially Fear and Pain, and thus fail to cope with it when it happens - it has been long observed by social psychologist that, contrary to popular myth,
women cope better in times of disaster than men.

2. Previous experience: One reason for our relative inability to cope with Pain is simply lack of experience with severe Pain. Modern life protects us from dangerous occupations, and pain-relieving drugs allow us to ignore what pains we do get. In many 'primitive' societies Pain is used as a test of 'manhood'. What this does is to expose the boys to Pain and teaches them how to cope with it by giving the Pain injury a special non-hurt interpretation.

3. Expectation: If we expect that something will hurt a great deal, it is more likely to do so than if we expect that it won't. For example, we have a hotplate which is hot but touchable: we touch it to see how hot it is. If we expect it to be painfully hot, then the merest touch will make us pull our hand away and say "Ouch!". If we expect the plate to be warm only, we will leave our hand on it longer.

4. Loss of Control: The main difficulty people have is the belief that the cause of the Pain they are suffering (ie. the injury) is so great that they will be permanently hurt by it and not survive it. When the physical injury is great enough, this may be true. However, this same attitude can be attributed to even mild injuries. Furthermore, some people become afraid that they will be embarrassed by expressing their Pain feelings, and thus avoid any possibility of being hurt. For example, a person may believe that he will not be able to tolerate a certain pain and will probably run out/scream/faint or do other things which may cause him extreme embarrassment. In the extreme form, the person may believe he will die.

SOME THEORIES ABOUT FEAR & PAIN

Much scientific and just commonsense observations have been made about Fear and Pain. Below are three thoughts about Fear and Pain which have relevance to this Project and might be of interest:

1. Fear as Thought

M.P. Leahy writes that Fear is really the product of the mind. He defines Fear as an "uneasiness of mind, which is dependent on the thought that evil...may or must befall ourselves." It is our thoughts about up-coming events which are the causes of our Fears, not the actual occurrence of the events. These thoughts can be based on a factual incident (eg. thinking about a dentist's drill or needle), or it can be based on imagination (eg. imagining that the dentist will make a mistake with the drill and go straight through to the brain). In either case, Leahy emphasises, it is the thought that makes us upset, not the event, which has not yet happened.

2. The Two Fears, or The only thing to fear is Fear itself

Claire Weekes talks about the concept of two Fears. The First Fear is the reflex response of the body to observed danger (eg. a speeding car). This is a normal response, and goes away when the danger passes. In people who become sensitised to a situation (such as the dental situation) this First Fear is more intense and almost always leads to the Second Fear.
his Second Fear can usually be identified because it occurs as a thought and is preceded by such statements as "Oh my God! here it comes again", or "What if..." The Second Fear comes immediately after the First Fear, and is often difficult to separate. It is the Second Fear which is called "panic", and is the one which is the Fear of Fear itself.

3. Pain versus Hurt

Researchers who study Pain try to distinguish the Perception of Pain from what they call Pain Behaviour (the reactions to the Pain). Ainslie Meares talks about "pure pain" (the Pain signal) and "hurt" (the pain behaviour). In his book, 'Relief Without Drugs', he writes: "In ordinary circumstances pain hurts. Because it hurts we react to it. We therefore rarely experience pain in pure form...You can actually prove this easily enough. Take a pin and stick it lightly into your forearm. It hurts, you screw up your face and perhaps say "Ow" under your breath. You would tell me that the painful stimulus hurts, and you react to it. This is not quite true. I do not think that there is a time sequence to these two events - the hurting and the reaction to it. I think they occur together, or the reacting may in fact precede the hurting. This is also easy to prove. Now decide to yourself that you will stick the pin in yourself again, but this time you will not in any way react to it. Make sure your face muscles are calm and easy. Now stick in the pin. Yes, you feel it. But this time there is no hurt. If we do not react to it, there is little or no hurt in the painful stimulus. At the same time we feel it. The sensation that we feel in these circumstances is some approach to pain in pure form."

Meares' claims may seem extreme, but it is interesting to observe how people, at even the thought of sticking a pin into themselves, start displaying pain behaviour (screwing up their faces, tightening muscles).

IMPLICATION FOR TRAINING FEAR & PAIN CONTROL

In this Info Pack we discussed some of the theories of and influences on Fear and Pain. The implications of these are that knowledge of these allows us to begin to manage unreasonably large Fear and Pain where they occur in the absence of a large physical cause of these.

There is little we can do about individual differences and previous experiences, but we can train ourselves to alter our expectations and thoughts. With learning and practice, we can change our patterns of negative thinking to positive thinking, and our feelings of loss of control to ones of having control. These changes will lead to a recovery of confidence in our ability to cope with the dental setting, and thus to actual improvement in doing so.

This Programme will:

1. Educate about Fear and Pain
2. Provide some useful techniques in coping with Fear and Pain
3. Guide you in your work in learning to cope with your Fear of dentistry.
The two components of Fear and Pain are __________ & __________.
The physical part of Fear is the ___________ of danger, and of Pain is _____________. The psychology of Fear and Pain is the mind's ______________ of the physical events.

Four factors which influence the psychology of Fear are:
1. ___________________________ , e.g. ___________________________
2. ___________________________ , e.g. ___________________________
3. ___________________________ , e.g. ___________________________
4. ___________________________ , e.g. ___________________________

Practice in expressing Pain is/isn't important in learning to cope with it.

According to M.P. Leahy, Fear is mostly a ___________. This can be based on fact or _________________.

The First Fear is the __________ response of the body. The Second Fear comes _____ the First Fear and is also called ___________.

Examples of what people do when they are showing Pain Behaviour include ________________________________________________________.
A BRIEF RELAXATION PROCEDURE

Feelings of Fear/Anxiety and of Relaxation can be considered opposites. When we are Fearful/Anxious, our bodies tense up. Quite obviously, we cannot be both tense and relaxed at the same time. Thus, one of the most direct ways of countering tension is to practice relaxation and become skilful enough to make the power of Relaxation greater than the power of the Fear.

Tension and Relaxation occur in the body and in the mind. However, these two are closely related: tension in the mind leads to tension in the body, and tension in the body leads to tension in the mind. The converse is just as true: stopping mental tension leads to the end of bodily tension, and stopping bodily tension leads to a drop in mental tension.

RELAXATION & DENTAL FEAR

From Info Pack 1 we learned how Fear produces a set of distressing, even frightening, symptoms. In Info Pack 2 we discussed how Fear can be separated into First and Second Fears. Learning to relax your bodies helps to break the vicious cycle of the two Fears by allowing you to begin to control the intensity of the symptoms of Fear, especially the Second Fear. This reduces the total distress you usually feel in the Dental setting, and begins to bring it down to the level with which you can cope.

PROCEDURE

There are many ways of practicing relaxation - from engaging in a quiet hobby, listening to soft music, making love, to more formal ways such as progressive muscular relaxation, yoga, meditation, and others. The procedure used here will be a simple and easily learned one which utilises bits of the others. It is called "cue-controlled relaxation", and combines breath control, muscular relaxation and mental relaxation.

One common misconception about relaxation is that being relaxed is like being asleep or in a trance and losing control over your body. This is not so. Relaxed people are very much aware of their bodies and the events around them. In fact, relaxation techniques heighten awareness of the body by teaching the person to notice the differences in themselves between tense and relaxed states. Furthermore, with practice, it is possible to relax your body differentially, that is, keep some of your body tense while relaxing other parts. For instance, in dentistry you have to keep your mouth open wide but you can relax your arms, back and legs.
Preparing: Sit back in an armchair, or even lie down. It is not necessary to make yourself fully comfortable as you want to learn to relax yourself in an uncomfortable situation later on. You may find it easier to close your eyes and shut out outside distractors. During the learning practice (as distinct from applied practice in the Dental Surgery) you should aim for a deeper level of relaxation than you would realistically achieve in the Dental setting.

Practice: The normal breathing rate is 10 to 12 times a minute (that is, about 5 seconds to breathe in and out). Sit back and notice your breathing. Try to get it even and regular -- in, out, in out. Notice how your body sags and relaxes naturally when you breathe out. Each time you breathe out say the word "relax" to yourself. In, out, in, out, in, relax, in, relax, in, out, in, relax, in, relax. Let your body sink deeper and deeper into the chair. Allow all tension to leave your body when you breathe out -- arms, legs, stomach, back, neck, shoulders, face. Think only of your breathing and of relaxing. In, out, in, out, in, relax, in, relax. Sink deeper and deeper into the chair. Relax. Relax.

Continue for 15 to 20 minutes. At the end allow yourself to regain alertness slowly. Savour the marvellous relaxation you're feeling. Try to remember it for the time you will need it in times of tension. Notice how relaxed your body is and how peaceful your mind is.
## THE DENTAL EXPERIENCE

<table>
<thead>
<tr>
<th>FACTUAL</th>
<th>SENSORY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The waiting room</strong></td>
<td>Receptionist present Other people</td>
</tr>
<tr>
<td><strong>The surgery</strong></td>
<td>Dental chair Dentist Assistant</td>
</tr>
<tr>
<td><strong>Being prepared</strong></td>
<td>Benches with instruments</td>
</tr>
<tr>
<td></td>
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<tr>
<td><strong>Being prepared</strong></td>
<td>Reclining on chair Lying back in chair Bib being put around your neck Dentist sits next to you; assistant on other side Overhead light turned on Tray of instruments brought closer</td>
</tr>
<tr>
<td></td>
<td>Lying in horizontal position Being surrounded by people and objects</td>
</tr>
<tr>
<td><strong>Examination</strong></td>
<td>Open your mouth Exam mirror put in The probe put in Probes pokes into teeth; scrapes plaque; removes food from between teeth Air blown in to remove debris Dentist's fingers in your mouth</td>
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<tr>
<td></td>
<td>Mouth stretched open Metallic taste in mouth Feel teeth being scraped and pushed by probe Blasts of cold air Saliva begins to build up Possibly get a strong swallowing reflex; difficult to swallow Feel the texture of dentist's fingers in mouth</td>
</tr>
<tr>
<td><strong>Topical anaesthetic</strong></td>
<td>Dentist holds cheek out from gum Cotton wool rubbed on gum</td>
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<tr>
<td></td>
<td>Bitter taste if gets on tongue Cotton wool rubbing on gum and cheek - feel dry Numbness in small area of gum</td>
</tr>
<tr>
<td><strong>Injection</strong></td>
<td>Cheek is held out by fingers Syringe is put into the mouth Needle pierces and enters the mouth Anesthetic is injected You rinse the mouth</td>
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<tr>
<td></td>
<td>Fingers pushing in your mouth Feeling a cold, metallic object in your mouth Feeling the prick of the needle in your gum Feeling the needle being pushed further into your gum Dull pain in your gum as the liquid goes in Tingly feeling as the anaesthetic begins to take effect</td>
</tr>
</tbody>
</table>
7. Drilling

- Fingers in mouth
- Drill in mouth
- Drill on the tooth
- Water spraying around the mouth
- Sucker in the mouth collecting water from the spray
- A low-speed drill is used to finish off

8. Filling

- Cavity varnish is smeared inside the cavity with cotton wool
- Cement lining is mixed by the assistant and is pushed into the cavity by the dentist
- The silver amalgam (surface coating) is mixed and put on the tooth. This is shaped with a spatula-like instrument.
- Sometimes a silver band is put around the tooth while the filling is being put in.
- From time to time the assistant puts in the sucker to draw out the saliva
- Cotton wool wads are also put in to soak up the saliva

9. Post treatment

- The anaesthetic begins to wear off after about 2 hours

**FACTUAL**

**SENSORY**

Bitter taste of anaesthetic
Spitting out the saliva is difficult because the mouth is numb

High-pitch whine of drill
Mouth is full of water - collecting in throat; possible gagging; wanting to swallow but having difficulty doing so
Gurgling and hissing of sucker
Possible burning smell of the drill against the tooth
Low-speed drill has a vibrating rumbling sound - sounds rougher than the high-speed drill (no water)

Very 'dental' smell of the varnish
Burning taste of varnish if gets on tongue
Pushing feeling as the cement is forced into the cavity
You will feel various instruments going in and out of your mouth
The silver band clamps around the tooth and presses in around the tooth and gum
The sucker dries parts of your mouth linings
Mouth becomes dry in parts due to the cotton wads

Some return of pain after the anaesthetic begins to wear off
The mouth begins to regain its feeling
Language is an extremely important aspect of human interaction. It communicates information from one person to another and helps us to express our inner emotions. We also use language to communicate to ourselves. We've all been caught at some time or other talking to ourselves. Usually we feel embarrassed because talking to yourself is considered "childish", or even a sign of approaching senility. This should not be so: we all talk to ourselves deep down. When dealing with a difficult problem, we talk continuously and often out loud as if talking to ourselves helps us to solve the problem more easily. For example, when first learning to knit, you may say things like "through, thread over, now pull off." As you get more skilled, this talking to yourself gets less and less noticeable, until you try a new type of stitch - and you start talking to yourself again.

Psychologists have recognised that self-talk serves to help people to regulate their own behaviours. It is like trying to park a car in a tight spot - an assistant may stand outside guiding you, saying things like "a bit more...easy now...the other way..." Such talk serves to regulate the driver's behaviour. Self-talk is the same, but you do the talking and regulating to yourself. It is as if thoughts alone are not strong enough in difficult situations - putting them into words is more effective.

SELF-TALK AND FEAR

In Info Pack 3 we discussed Fear as being a thought. More specifically, we discussed Second Fear as being preceded by a thought that something is going to happen. From above, we see that if such a thought is turned into words it becomes even more powerful. If a Fear is too powerful, it paralyses us and makes it impossible for us to cope with it. This is the point of panic. Once you are in a panic, you cannot stop it. So people cope by totally avoiding the situations which might potentially cause a panic reaction. If they cannot avoid it, such as dentistry when you have a severe tooth ache, then strong measures may have to be taken, such as general anaesthetics or tranquilizers.

How does self-talk work? Let's imagine now that you are in the stage of dental work that you particularly fear. Close your eyes and picture the scene and you in it. Your body is probably now experiencing some of the unpleasant Fear symptoms. Try to remember the last time you were in that situation. What thoughts went through your mind? Did you say things to yourself such as:

- "Oh my God! I can't cope"
- "I'll do something stupid like hit the dentist"
- "I hate myself for being this weak"?
The above are some of the negative self-statements people make when in a fear provoking situation. It is these self-talk statements which give rise to what Claire Weekes calls the Second Fear, or panic. Such negative self-talk feeds the fear and makes it even greater. It implies that you are ineffective in controlling your body and symptoms. It in turn makes you ineffective, just like doing poorly in an exam when you are nervous.

Below are some spaces for you to fill in as an exercise for the next part of the Programme. On the left list the negative self-talk statements you said to yourself when remembering the scene above, or other fearful situations.

<table>
<thead>
<tr>
<th>NEGATIVE</th>
<th>POSITIVE</th>
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By now, of course, you would have begun to think about positive self-talk. The best known example of the use of positive self-talk in a practical situation is an athlete's "psyching up" for a game or an event. This usually consists of repeating positive statements such as "I can win", "I can go faster", to themselves in an almost hypnotic way. Positive self-statements for fear consist of telling yourself that the danger is not great, that there is nothing to be afraid of, that you can overcome your symptoms, etc. In the spaces above you may want to write the positive versions of the negative statements.

SELF-TALK AND PAIN

The concept of positive and negative self-talk also applies to the experience of pain. Meares' exercise with the pin was really an exercise in self-talk ("I am not going to display pain behaviour"). The important facts to remember about pain in dentistry is that:
1. it is almost never severe due to improved modern techniques,
2. when Pain does occur, it is always brief (eg. a few seconds)
3. you can tolerate far more Pain than you will experience in
   the dental setting.

Below is another exercise in positive and negative self-talk. It will
be useful for you to complete the list of statements for you.

<table>
<thead>
<tr>
<th>NEGATIVE</th>
<th>POSITIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can't bear it</td>
<td>I can stand even more</td>
</tr>
<tr>
<td>I'll faint if it continues</td>
<td>It will be over in a few seconds</td>
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</tbody>
</table>
By now, you will have become familiar with some facts about Fear of dentistry and with some basic techniques for overcoming some of the distressing symptoms you may experience. As with all skills the crunch comes in being able to apply them in the real-life situation. The best way of doing this is to go to the real situation and practicing doing the techniques. In Fear of dentistry, this is difficult to arrange, especially if your Fear begins way back so that by the time you get to the dentist your anxiety reactions are already so great that you cannot even remember what you have to do.

An effective way of getting around this problem is to over-learn the skill before actually proceeding to the real situation. Thus, actors do rehearsals without an audience, apprentices practice on scrap material, and students swot up their notes before an exam. For Fear of dentistry, you can most easily practice going to the dentist by using your imagination. Going through a set of motions in your imagination has been found to be effective in actually doing a task later on. Some people plan their day in the morning by imagining themselves actually doing the things they have to do - what, how they will get there, what they will say to whom, etc. When the time comes, it is as if they had done it before, and it is therefore easier. This is simply an extension of self-regulation by the use of self-talk.

Going to a dentist is a complex behaviour involving many separate events: making an appointment, sitting in the waiting room, going in, etc. Fear can occur at any point in time, and you should be prepared for it by having a coping strategy tailored for the situation. This strategy should be ready at all times and be almost automatic. This requires you to have a list of techniques ready and firmly ingrained in your mind. Remember that once you get fearful, you begin to forget and become confused, so it is too late to try to recollect dimly-remembered techniques.

It is also important to keep in mind that different people have different ways of using the techniques outlined in this programme. For example, every person has her own self-statement which is most meaningful/powerful to her. It is only with practice and experimentation that you will find the best one for you.

Below you will find a table of events involved in going to a dentist. Each presents its own problem to the fearful person. Against each event is a suggested coping technique. There are also some suggestions for strategies, but also some blanks for you to put in your own most effective self-statement. This table is the culmination of the programme and summarises the most significant coping devices that were discussed.
<table>
<thead>
<tr>
<th>EVENT</th>
<th>PROBLEM</th>
<th>TECHNIQUE</th>
<th>STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling a hole/toothache</td>
<td>Ignoring the signal</td>
<td>Self-talk</td>
<td>&quot;It is best if I go&quot;</td>
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<tr>
<td>Making phone appointment</td>
<td>First signs of Fear; regret</td>
<td>Self-talk</td>
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<td></td>
<td></td>
<td>Relaxation</td>
<td>Breathing control while on phone</td>
</tr>
<tr>
<td>Waiting for day of the appointment</td>
<td>Fear of not coping</td>
<td>Self-talk</td>
<td>&quot;I will cope&quot;</td>
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<tr>
<td></td>
<td>Awareness of irritability</td>
<td>Self-talk</td>
<td>&quot;I am irritated because I am anxious&quot;</td>
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<td>&quot;I will stop taking it out on the family&quot;</td>
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<td>Relaxation</td>
<td>Breath control during bouts of anger</td>
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<tr>
<td>Day of appointment; day before</td>
<td>Mounting Fear</td>
<td>Information</td>
<td>Scan through programme</td>
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<td></td>
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<td>Self-talk</td>
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<tr>
<td></td>
<td></td>
<td>Relaxation</td>
<td>Deep relaxation</td>
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<tr>
<td>Driving to appointment</td>
<td>Heightening of Fear reaction</td>
<td>Relaxation</td>
<td>Deep relaxation</td>
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<td>Differential relaxation</td>
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<td></td>
<td>Loss of confidence</td>
<td>Self-talk</td>
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<tr>
<td>EVENT</td>
<td>PROBLEM</td>
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<tr>
<td>Waiting in the waiting-room</td>
<td>Sharp Fear reaction</td>
<td>Relaxation</td>
<td><strong>Arrive 5 - 10 minutes early, and practice deep relaxation</strong></td>
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<td>Self-talk</td>
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<tr>
<td>Sitting in the dentist's chair; getting treatment</td>
<td>Extreme Fear; Pain; Fear of Pain; severe symptoms</td>
<td>Relaxation</td>
<td><strong>Breath control OR preferably deep, differential relaxation</strong></td>
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<tr>
<td></td>
<td></td>
<td>Self-talk</td>
<td><strong>Emphasise coping:</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;I can cope&quot;</td>
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<td></td>
<td><strong>Remind self it will be over soon</strong></td>
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<td></td>
<td><strong>Observe how you have coped to now and tell yourself you can keep going:</strong></td>
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<tr>
<td>After treatment</td>
<td>Reward</td>
<td></td>
<td><strong>&quot;I did really well&quot;</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td><strong>&quot;I'm proud of myself&quot;</strong></td>
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<tr>
<td>Preparing for next time</td>
<td>Losing the new-found confidence</td>
<td>Self-talk</td>
<td><strong>&quot;I will be even better next time&quot;</strong></td>
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<td></td>
<td></td>
<td></td>
<td><strong>&quot;I know how to handle my Fear now&quot;</strong></td>
</tr>
</tbody>
</table>
Use of Cognitive Rehearsal

The object of Cognitive rehearsal is to practice those skills which you hope to use in real life, but to practice them in your mind first. Practicing them in the imagination will help your body to learn the new actions. For this exercise it would be even better if you could re-experience some of the Fear symptoms that you actually feel in dentistry. An attempt was made to reproduce physical Pain in the cold-water test. Here, we will try two mental approaches:

1. Imagining yourself in the situation and allowing your body to re-experience the Fear symptoms that come to you just by thinking about the situation,

2. Accentuating some of the Fear symptoms by inducing over-breathing (You should not get concerned by this because, as with the cold-water test, you are in control and can stop any time you want).

Once you have started to re-experience some of the nasty Fear symptoms, you can immediately switch over to the coping strategies, namely relaxation and positive self-talk. This is the Cognitive Rehearsal part of the exercise. You should continue with the Rehearsal until your symptoms diminish. Because all this happens under your control and at your own speed, you can repeat this process as often as you need. In time you will be able to reverse the symptoms at will during Rehearsal. You will then find that this skill for symptom control will extend to the real life setting. It may not, of course, be as effective as the Rehearsal, but remember that your goal is to lower your symptoms, not necessarily eliminate them. However, the better the Rehearsal, the better the real life performance.

Illustration

Let us take "Waiting in the waiting room" as an illustration. Work through the following stages of the Rehearsal:

1. Re-Living: Sit back and imagine you are in a dental waiting room (closing your eyes may help). Using you own memory and the items in Info Pack 4 ("The Dental Experience") get as clear and detailed an image as possible. Imagine the people and objects, smell the smells, hear the sounds, and so on. Allow your body to feel the Fear reactions as if you were really there.

2. Accentuate the Symptoms by over-breathing: breathe quickly as if you had just run a sprint. Within 30 to 60 seconds you will begin to feel Fear symptoms such as giddiness, weakness, tingling in fingers and others. Now you are more like in real dental situation.

3. Rehearse: Stop over-breathing and start to practice the appropriate coping strategies as set out in the Table above. Notice how you do the relaxation. Monitor your body responding to this and relaxing. Self-talk and notice how you do this. Monitor how you slowly gain more confidence, even if it is in the imagination. Practice as often as you can, because this is how you have to do it in real life.
Programme Evaluation

This questionnaire will help me to determine which, if any, parts of the treatment programme were particularly relevant and useful to you. Please answer them as accurately as you can. Do not feel embarrassed to say that parts were not useful. Your accurate evaluation of this programme will mean that future participants will get an even better presentation. Remember also that each person has his/her own needs and are expected to find different issues more relevant.

Below you will find a list of components of the programme. You will also find a double column of ratings: RELEVANCE referring to the degree to which the component was relevant or important in covering those issues which cause you difficulty in dentistry; USEFULNESS referring to the degree to which the component was useful in allowing you to overcome your Fear of dentistry.

(NOTE: Components 8 and 9 may not be applicable to you. If so, cross out)

<table>
<thead>
<tr>
<th>COMPONENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Volunteering to participate; filling in first questionnaires</td>
</tr>
<tr>
<td>2. Attending the first, arranged dental visit</td>
</tr>
<tr>
<td>3. Info Pack 1</td>
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<td>4. Info Pack 2</td>
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<td>5. Info Pack 3</td>
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<td>6. Info Pack 4</td>
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<td>7. Info Pack 5</td>
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<td>8. Pain Training</td>
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<td>9. Imaginal Rehearsal</td>
</tr>
<tr>
<td>10. Summary and Review</td>
</tr>
<tr>
<td>11. Homework Assignments</td>
</tr>
<tr>
<td>12. Meeting other people with the same difficulties and reactions</td>
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<tr>
<td>13. The total programme</td>
</tr>
<tr>
<td>14. Other (describe):</td>
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</table>

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>RELEVANCE</th>
<th>USEFULNESS</th>
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<tr>
<td></td>
<td>Not at All</td>
<td>Some</td>
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<td>14</td>
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</tbody>
</table>
Which, if any, part/s did you find most useful


Which did you find least useful


If you found the total programme useful, in what way did it help


What would you have liked more or less of, or added:
MORE / ADDED


LESS


How much of the homework did you have time to complete/did complete:
NONE  SOME  MOST  ALL

How much relaxation did you have time to do:
LESS THEN  2 - 3 PER  4 - 5 PER  6 - 7 PER
2 PER WEEK  WEEK  WEEK  WEEK

Now that you have thought about your fear of dentistry in more detail, can you describe what it is about dentistry that made you so fearful of it? (Include those things within you and also those coming from the dentist):
If you had the opportunity, how would you change the way the dentist worked to make your visits easier?

Please write any other comments, suggestions, thoughts, criticisms, etc, you may have about fear of dentistry, dentists, this programme, psychology, or any thing else. I welcome these.

Thank you for participating.
APPENDIX 13

DEFINITIONS AND EXAMPLES OF CATEGORIES OF FEAR STIMULI

Drill: Any reference to the sight, sound or anticipation of drilling:
e.g., 'I imagine the fine drill going through my tooth slowly'
   'fear of the drill hitting a nerve'
   'sound of the drill'

Injection: Any reference to injection; fear of the anesthetic wearing
   off or not being effective:
   e.g., 'I have memories of pain from the needle injections'
   'fear of injection not working'

Examination: Any reference to the use of the probe or inspection
   of the teeth:
   e.g., 'it is the probe that gets stuck and then is wrenched free'

Extraction: Any reference to the extraction of a tooth:
   e.g., 'I will feel a tooth being extracted'
   'the sound of pulling a tooth'

Loss of Control: Any reference which implies a loss of personal
   control over the situation or loss of autonomy:
   e.g., 'the feeling of total helplessness'
   'the fear of being trapped in the chair'
   'I don't like my mouth being touched'
   'the general feeling of being vulnerable'

Dentist: Any reference to the dentist's aversive manner or procedure,
   attitudes or perceived incompetencies:
   e.g., 'I feel a lack of confidence in the expertise of the
      dentist'
   'I hate the patronising attempts at sympathy by the
      obviously annoyed dentist'
   'the mood of the dentist'

Pain: Any direct reference to pain; any use of the word 'pain':
   e.g., 'pain of injection'
   'fear of pain when the cold air is blown on my teeth'
   'my terror of feeling pain'
   (When the word 'pain' was used in conjunction with another specific
    stimulus, it was only scored for Pain: e.g., 'pain of injection'
    was scored for 'Pain' and not for 'Injection'.)

Physical Injury: Any reference to at least one of the categories
   dealing with fear of physical injury or harm, that is, the categories
   of Drill, Injection, Examination, Extraction or Pain.