An experimental investigation of the role of safety-seeking behaviours in the maintenance of panic disorder with agoraphobia

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Abstract

This study evaluates the hypothesis that safety-seeking behaviours play an important role in maintaining anxiety because they prevent patients from benefiting from disconfirmatory experience. Patients suffering from panic disorder with agoraphobia carried out a behaviour test, closely followed by an experimental session, which included a brief (15 min) period of exposure during which participants either stopped or maintained within-situation safety-seeking behaviours. When the behaviour test was repeated within two days, patients who had stopped their safety-seeking behaviours during the experimental session showed a significantly greater decrease in catastrophic beliefs and anxiety than those who had maintained safety-seeking behaviour. This difference was also reflected in questionnaires measuring clinical anxiety. These results are consistent with the cognitive hypothesis. © 1999 Elsevier Science Ltd. All rights reserved.

1. Introduction

The link between anxiety, panic and agoraphobic avoidance has received considerable attention over the past two decades. Behavioural approaches to the understanding and treatment of agoraphobia have largely focused on two process theory (Mowrer, 1960). According to this view, the development of avoidance is crucial to the *persistence* of classically conditioned agoraphobic anxiety by both preventing and prematurely terminating exposure to the CS and thereby preventing the extinction of conditioned fear responses. This behavioural theory provided the rationale for the development and implementation of exposure treatments

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(Mathews, Gelder, & Johnston, 1981; Rachman, 1990), which were found to be highly effective in reducing phobic anxiety.

More recently, two process theory has come under critical scrutiny both from within behaviour therapy and from those advocating a biological approach to the understanding and treatment of anxiety. Rachman (1976) questioned the theoretical utility of two process theory. He went on to question the central notion that escape behaviour strengthens subsequent avoidance in experimental studies (Rachman, Craske, Tallman, & Salyom, 1986). From a different perspective, others such as Marks (1987) suggest that learning theory approaches add nothing to the understanding and application of exposure treatments. Marks proposes instead that the "exposure principle" is all that is required to conceptualise fear reduction techniques, and that the questions which remain should primarily focus on how better to deliver exposure treatments.

Biological theories have emphasised the hypothesis that although agoraphobic behaviour consequence of panic attacks or panic-like symptoms (Gorman, Liebowitz, Fyer, & Stein, 1989) it is not a key factor in prolonging panic. Avoidance behaviour is a response to panic attacks, and secondary to them. When full panic attacks are not present, it is hypothesised that "panic-like symptoms" drive the avoidant behaviour. This way of viewing agoraphobia contrasts sharply with behavioural theories, and suggests that the main focus of treatment should be on the panic attacks and panic-like symptoms, with direct attention to agoraphobia only if avoidance does not fully remit once the panic symptoms have been dealt with. Given that exposure is known to be effective in the treatment of agoraphobia with panic disorder (Mathews et al., 1981), neither the behavioural nor the biological approach adequately explain the mechanism by which exposure has its effects.

To develop more effective fear reduction techniques, a theoretical understanding of the psychological mechanisms involved when exposure results in fear reduction is therefore required. The passing of the two stage theory of phobic avoidance has left a theoretical gap which, if not filled, is likely to hamper the further development of more effective psychological treatments for anxiety problems. The cognitive-behavioural theory of anxiety provides a coherent general account of the occurrence and maintenance of anxiety problems and can explain the effectiveness of exposure-based treatments. According to the cognitive-behavioural theory (Beck, 1976; Beck, Emery, & Greenberg, 1985; Clark, 1986b; Salkovskis, 1996), anxiety disorders arise when situations are perceived as more dangerous than they really are. Once such a threat is (mis)perceived, at least three mechanisms may be involved in the maintenance of persistent high levels of anxiety; selective attention to threat-relevant stimuli, physiological arousal and safety-seeking behaviours. (The latter include avoidance and escape behaviour; as explained below they may also include other mechanisms.) Each of these reactions may occur as a response to threat and anxiety, and they may serve to amplify or maintain the crucial threat beliefs. The cognitive theory suggests that, in phobic anxiety, safety-seeking behaviour is particularly important in the maintaining perceived threat. The present paper describes an investigation of this factor in patients suffering from panic disorder with agoraphobia, building on the cognitive theory of panic (Clark, 1986a, 1988).

The agoraphobic believes that entering situations such as crowded shops is likely to result in some catastrophic physical or mental harm. The catastrophes most commonly feared during a panic attack include passing out, having a heart attack, going crazy, losing control over their

behaviour (Clark, 1986a,b). Such beliefs about the effects of entering agoraphobic situations are not justified, since the person does not pass out, have a heart attack, lose control, go insane and so on. Why, then, do the beliefs persist despite repeated disconfirmation? The cognitive hypothesis proposes specific links between panic and avoidance which override the effect of the objective disconfirmations. If panic patients misinterpret a situation (e.g. the occurrence of intense bodily sensations) in a way which leads them to expect an imminent disaster, they will behave in a way that is intended to avert the feared disaster. Thus they not only avoid the situation but also the *feared outcome*; since the feared outcomes differ between patients, so do the behaviours they adopt to evade them. It is not anxiety which is avoided and escaped, nor the situation, but catastrophes which the person believes are about to occur. In a study of panic patients (Salkovskis, Clark, & Gelder, 1996), the interpretations patients made during panic attacks and the safety-seeking behaviours they attempted to deploy in those attacks were found to be related in the way predicted by cognitive theory. For example, patients who reported that, during a panic attack, they believed that they were going to pass out were more likely to hold on to people or objects than were those who did not have such a belief. Similarly, only patients who were afraid of being paralysed with fear reported trying to exercise more during panic, and so on.

The scope of avoidance can thus be regarded as broader than generally encompassed by behavioural descriptions (e.g. Marks, 1987), with both kinds of avoidance playing a major role in the maintenance of panic attacks (Salkovskis, 1988, 1991). The patient who interprets a weak feeling in the legs as a sign that he may collapse attempts to prevent collapse by holding on to nearby objects, tensing his legs and seeking a seat. By doing so, he prevents disconfirmation of his fear of collapse. Patients are often unaware of the anxiety maintaining effects of their avoidant behaviour (described here as safety-seeking behaviour). Thus, the subjective impact of their behaviour is to transform an incident which could have provided a disconfirmation of their fears into evidence *maintaining* their negative interpretation of symptoms. These patients believe that they have experienced a "near miss" and may say "If I had not prevented it by tensing my legs, then I would certainly have collapsed". The cognitive hypothesis predicts an internally logical match between such beliefs and behaviours during panic; for example, fears of loss of control should be associated with attempts to control oneself, and this is what was found by Salkovskis et al. (1996).

Similar considerations can be applied to more generalised forms of avoidance and escape behaviour; an agoraphobic who decides not to go shopping on a particular day may conclude "It's lucky I did not go, otherwise I would have had an enormous panic; if I had panicked today, I would certainly have collapsed". Once again, avoidance has "prevented" collapse. However, these types of avoidance behaviours are only logically possible when the feared catastrophe has external correlates; that is, leaving a situation has only limited value as a strategy for dealing with an impending heart attack. The main usefulness of such a strategy would be in situations where social evaluative concerns predominate; removing oneself from other people is a helpful strategy both as catastrophe avoidance and removing the person from the scrutiny of others.

As panic and avoidance become more chronic, the behaviours involved become habitual and awareness of the specific cognitive component diminishes although it can often be produced by further exposure. Often patients express their fears as a desire to escape; for example, when

asked what went through their mind in a phobic situation, patients typically respond "I just had to get out". The particular belief is readily revealed by asking what, at that time, would he have though the worst thing that could have happened should he be unable to get out. Thus, the cognitive analysis of avoidance involves an analysis of *what outcome the patient is avoiding* rather than just of the anxiety arousal/relief associated with the specific situation.

Cognitive theory predicts that safety-seeking behaviours have the effect of maintaining anxiety-generating beliefs because patients infer that they have prevented the occurrence of feared catastrophes by their behaviour. The experiment described here is designed as a direct test of this prediction by examining the effect of safety-seeking behaviours in panic disorder with agoraphobia. Exposure to feared situations was compared under two conditions. In one condition patients are encouraged to maintain their safety-seeking behaviours, in the other they are encouraged to intentionally stop them. It was predicted that the latter would disconfirm their negative beliefs.

2. Method

2.1. Overview

Following assessment (including a behavioural walk), patients suffering from panic disorder with agoraphobia were asked to enter a clearly defined and individualised agoraphobic test situation for 5 min. During this behaviour test they rated anxiety and belief in the likelihood of a pre-identified catastrophe. Subjects were then randomly allocated to one of two conditions: (i) exposure with an habituation rationale in which patients were allowed to continue normal safety-seeking behaviours or (ii) exposure with a cognitive rationale designed to lead to disconfirmation of the identified catastrophe by having the patients decrease those specific safety-seeking behaviours which they believed prevented the feared catastrophes. The behavioural test was then repeated within the next two days to assess the impact of the experimental manipulation.

2.2. Patients

Patients were drawn from referrals for treatment of agoraphobia and panic to a Health Service Psychiatric Outpatient department and a Department of Clinical Psychology; some referrals came directly from general practitioners. Selection criteria were (i) DSM IIIR diagnosis of panic disorder with moderate or severe avoidance; (ii) at least two panic attacks occurring in the four weeks prior to assessment; (iii) a score of 9 or more on the modified Fear Questionnaire Agoraphobic avoidance subscale (Clark et al., 1994; maximum score on this scale is 15); (iv) the subject was unable to complete the penultimate step of a pre-determined standardised behavioural avoidance test course conducted prior to the experimental procedure (see below) (v) it was possible to identify both catastrophic thoughts which occurred during panic attacks, and safety-seeking behaviours which the patients said they carried out during the attacks to prevent the feared catastrophes. In addition, it was required that the patient rated an increase of anxiety from baseline of at least 20 points on a 100 point visual analogue scale when entering the 5-min individualised behaviour test.

A total of 18 patients met criteria for the experiment. The characteristics of patients in the two groups is are shown in Table 1. There were no significant pre-experiment differences between groups.

2.3. Measures used

2.3.1. Questionnaires

All patients completed the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the Beck Anxiety Inventory (Beck, Epstein, & Brown, 1988), a rating scale of panic frequency (Clark et al., 1994) and the modified Fear Questionnaire (Clark et al., 1994).

2.3.2. Behavioural walk

Patients fulfilling criteria were asked to undergo a standardised behavioural walk (BW). The experimenter described a standardised course of which the patient then tried to complete as much as possible, whilst rating anxiety at preset points on the course. Instructions were as follows:

> I am going to ask you to try to do a very difficult task. When you hear about it, you'll probably think that you can't complete it, and you'll probably be right. The idea is that we have set a task which, when you have successfully completed treatment, you should be able to do. Right now we want to find out how much of it you can do. Is that clear? The walk is planned so that you can turn back at any stage. Obviously, the further you go the better: go as far as you feel able. Some people can't even get to the car, others manage most but not all of the course. Whatever happens there is no success or failure, it just allows us to see how you are and how you are reacting.

The course was then described, and the patient given a street map which indicated both the route and the points at which anxiety was to be rated. The route involved going to the E's car (completion of this step was scored as one point), being driven to a quiet street near the city

Table 1
Characteristics of the two groups

Variable	Decreased safety behaviours $n = 9$		Exposure only $n = 9$	
	mean	(S.D.)	mean	(S.D.)
Sex ratio (m:f)	2:7		2:7	
Age (yr)	42.11	(13.5)	33.6	(11.7)
Agoraphobic avoidance	13.7	(2.2)	11.3	(3.2)
Step achieved in behaviour walk	2.9	(2.1)	2.44	(1.9)
Last step anxiety in behaviour walk	88.6	(10.3)	91.4	(9.4)
Panic frequency rating	2.9	(1.16)	3.0	(1.0)
BAI	33.3	(7.7)	40.4	(14.5)
BDI	18.4	(7.1)	19.0	(5.0)
Agoraphobic cognitions (frequency)	37.1	(8.8)	45.1	(15.8)

centre (two points), leaving the E in the parked car and walking along that street to a square (three points), crossing to the main street (four points), going to the entrance of a covered market (five points), going through the market (six points) to a crowded pedestrian precinct (seven points), into a shopping centre (mall) (eight points), waiting at a bus stop (nine points) and getting on the bus back to the start point.

Patients' comprehension was checked prior to their setting out and corrected as appropriate. Care was taken to explain that the Experimenters would remain in the place they parked at step 2 for 30 min, which was long enough for the patient to complete the entire course up to the bus stop and still return to the car. It was also pointed out that E's return route would take them along part of the patient's return route. These factors were explained in detail to prevent the patient from experiencing time pressure whilst undertaking the BW. During the BW the patient carried the map marked with the points at which anxiety ratings were to be made and a form for recording these ratings. In addition, the patient was asked to rate their anxiety at the point they turned back (if they did).

2.3.3. Behavioural test (BT)

The experimenters and each patient devised an individualised BT. The patient was asked to identify a situation which they predicted would reliably elicit moderate amounts of anxiety and which they were confident they could remain in for 5 min. In practice, the situations used varied from the patient going into the street in front of their home to going into a department store in the centre of town. To be accepted for the full experimental procedure, the patient had to experience at least a 20 point increase in anxiety ratings from the pre-test baseline during the BT. If the initial attempt did not elicit such an increase, a second, potentially more anxiety provoking situation was identified and entered. If the anxiety increase was not elicited in that BT, that patient was excluded from the experiment. The BT route was discussed and agreed in sufficient detail to ensure reproducability on the second occasion the patient did it.

2.4. Procedure

Key aspects of the procedure are summarised in Fig. 1.

All patients were screened at initial assessment using the SCID III R by an experienced assessor, and baseline questionnaires were administered. Informed consent was obtained from patients fulfilling criteria. The consent form used contained the following information about the experimental procedure.

Recent research has suggested that looking carefully at the way people suffering from agoraphobia react while in the situations which provoke anxiety may help us to understand more about the things which cause the problem itself. To look at this question more carefully, we are carrying out a study looking directly at people's reactions in situations which make them feel anxious and to see how these change as time goes by. The experiment will involve going into the type of situation which tends to make you feel anxious for a short time (for between 5 and 15 min) and recording your reactions in detail. You will be given some specific advice about dealing with the situation from time to time. You will also be asked to complete a number of questionnaires during the time the experiment is going on.
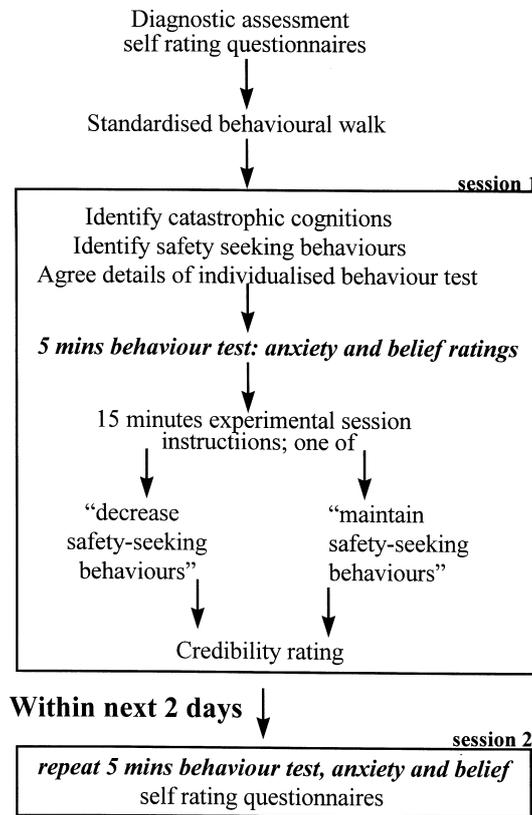
Diagnostic assessment
self rating questionnaires

Standardised behavioural walk

session 1

Identify catastrophic cognitions
Identify safety seeking behaviours
Agree details of individualised behaviour test

5 mins behaviour test: anxiety and belief ratings

15 minutes experimental session
instructiions; one of

"decrease
safety-seeking
behaviours"

"maintain
safety-seeking
behaviours"

Credibility rating

Within next 2 days

session 2

repeat 5 mins behaviour test, anxiety and belief
self rating questionnaires

Fig. 1. Diagram of main aspects of study.

All Subsequent sessions were conducted by two therapists, at least one of whom was highly experienced in cognitive-behavioural treatment of panic and agoraphobia. During the first experimental session, the details of the previous assessment were confirmed, and all patients were asked detailed questions about the particular catastrophic beliefs which were most prominent during recent specific panic attacks and the safety-seeking behaviours usually associated with those beliefs (see Clark, 1989; Salkovskis & Clark, 1995 for details of the type of assessment used). Once this assessment was completed, the behavioural walk was conducted. Those patients fulfilling criteria after the standardised BW were given two appointments over a period of 2–4 d, and were asked not to change their normal lifestyle for this period in order to limit self-exposure.

On the first of these appointments, the 5-min individualised behavioural test was conducted, followed by allocation to experimental condition and the experimental instructions and the 15-min experimental session. The second BT was conducted within the next two days (usually the day after) and patients were asked to try to do things in exactly the same way as they had on the first behaviour test. Questionnaire measures were also re-administered at the beginning of this session.

2.4.1. Experimental instructions

These instructions were individualised within experimental constraints for each patient; the individualised components are specified below in italics inside brackets.

All patients (regardless of subsequent experimental condition) were told the following prior to the 15-min experimental session:

What we want to do now is to find out more about the type of reactions to being in situations which make you anxious. In particular, it is important to discover what happens to your anxiety and the thought (*specific belief previously identified inserted here*) when you are in (*the situation previously identified*). The way your anxiety escalates in this situation has the effect of undermining your confidence in situations such as (*the situation previously identified*). The best way to deal with your anxiety is in fact to go into the situation which produces anxiety. There is one thing in particular which it is important to know before we go into details. You previously identified a particular belief which occurred during panic attacks. This was (*specific catastrophic belief*).

It is possible that the experimental group would infer from the instructions given that the experimenter was confident that the feared catastrophe would not occur, and that the controls would be less likely to recognise that this attitude. Both groups were therefore also told:

I'm very glad to be able to tell you that there is absolutely no chance whatsoever that this will happen. In our many years of work and the many people we and other therapists have helped, it is quite certain that (*the catastrophe*) never happens during panic.

In the control condition (exposure without instructions to change safety-seeking behaviours) patients were then told:

Obviously, being told that is not enough. You also need to be able to reduce your anxiety by going into (*the identified situation*) in a carefully planned way. Although you may have gone into similar situations before, the difference here is that you are going into the situation for a planned period of time. Up until now, you will have tended to leave when the anxiety was getting high. The important thing here is to stay in (*the situation*) for a set period, regardless of what happens to the anxiety. So, whatever happens, you know that you will be in there for 15 min, no more, no less. We know that this planned way of going into the situation is a particularly good way of reducing anxiety. This works a bit like getting into cold water; when you first get in it feels very uncomfortable, but after a while you get used to it. Of course, if you get out of the water quickly, then you never get a chance to get used to it, and feel more uncomfortable next time you try. A situation like (*the one identified*) is similar in this respect; what you have to do is go in, and stay there for a set period, whether or not you feel like you want to come out. When you do this, you will find that the anxiety decreases.

The rationale was discussed, amplified as necessary, and the patient was finally asked to summarise it for the experimenter to ensure comprehension.

In the *experimental* condition (decreased safety-seeking behaviour instructions), the instructions were as follows:

Obviously, being told that is not enough. First, we need to consider why your anxiety remains high, although you have been into the situations which frighten you a large number of times. This is usually because, although people never (*catastrophic belief previously identified*), they often believe that the things they do during a panic have prevented (*the catastrophe*) from happening. In your instance this would work like... (*the specific mechanism is specified here, focusing on the way the person believes they have saved themselves*) This means that every panic attack seems to you to be an occasion when you nearly (*catastrophe is specified*). Obviously, for your anxiety to go down, you have to discover that (*the safety-seeking behaviours*) do not really prevent (*the catastrophe*), but instead keeps you worried about it by preventing you from discovering what really happens. What you therefore need to go into (*the situation*) and stay there long enough to let you have a chance to discover that your fears are not true. If this is to work, it has to be done in a particular way. The idea is that you go into the situation and, when the thought occurs, you do your best to prove to yourself that (*the catastrophe*) cannot happen, particularly when you think that you are in danger of (*the catastrophe*), by stopping doing anything you are doing to prevent it. This would include any of the things which you normally do to prevent (*the catastrophe*), such as (*main examples of safety-seeking behaviour*). So, for example, when you go into the situation, you would (*identify appropriate disconfirming actions*) This will obviously improve your confidence, and will, after a period, make you feel better in the long term. This is because, to get more confidence, you need to go into and stay in the situation and prove to yourself that (*the catastrophe*) cannot happen).

The rationale was discussed, amplified as necessary, and the patient was finally asked to summarise it for the experimenter to ensure comprehension.

3. Results

3.1. Overview

Results indicate that the experimental groups did not differ in anxiety and belief ratings prior to the experimental manipulation, and that there was no difference between groups the expectation that the particular version of the experimental task they undertook would decrease their anxiety. The groups were also similar in terms of the activation of anxiety during the 15 min of the experimental task. As predicted, at the second behavioural test patients in the decreased safety behaviours group experienced significantly less anxiety and rated their belief in feared catastrophes as significantly lower. There was also evidence of differential clinical

improvement between experimental groups as indicated by standardised clinical questionnaire scores.

3.2. Baseline anxiety and belief ratings

Neither anxiety or belief ratings differed between groups at baseline, after the instructions for the BT had been given, or on arrival at the actual location of the BT. In independent t-tests, all t values were less than 1, $p > 0.3$. This was also true for anxiety ratings at the point just before the beginning the BT; while for belief ratings, $t = 1.6$, $p = 0.122$, with maintained safety behaviours group patients having a lower mean belief rating. The means can be seen in the early part of Figs. 2 and 3, which show the sequence of anxiety and belief ratings throughout the two BTs. The two experimental groups were therefore found to be very similar in terms of their anxiety and belief ratings prior to the first behavioural test.

3.3. Ratings during the experimental session and credibility of the experimental instructions

Anxiety and belief ratings taken at intervals before and during the experimental session were at no stage significantly different between groups on a t-test, $p > 0.1$ in every instance. Once the experimental instructions for the experimental period of 15 min of exposure had been given, all patients were asked for a credibility rating. The mean rating for decreased safety behaviours patients was 85 (S.D. = 12.4), and for maintained safety behaviours patients was 70,
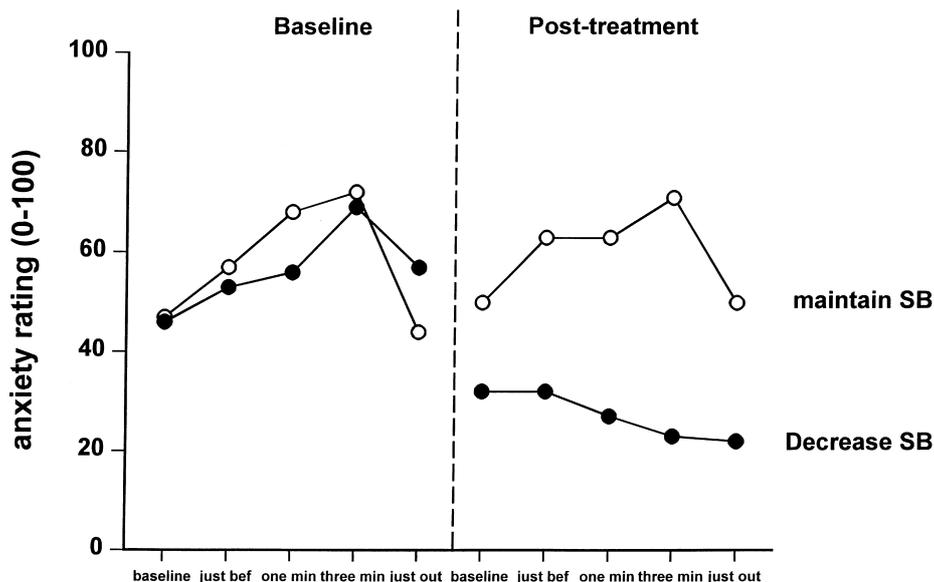
Fig. 2. Anxiety rating for the behaviour test prior to and following the experimental session. Just bef: immediately before entering the BT; one min, three min: one and three minutes after entering the test situation; just out: immediately after leaving the test situation.
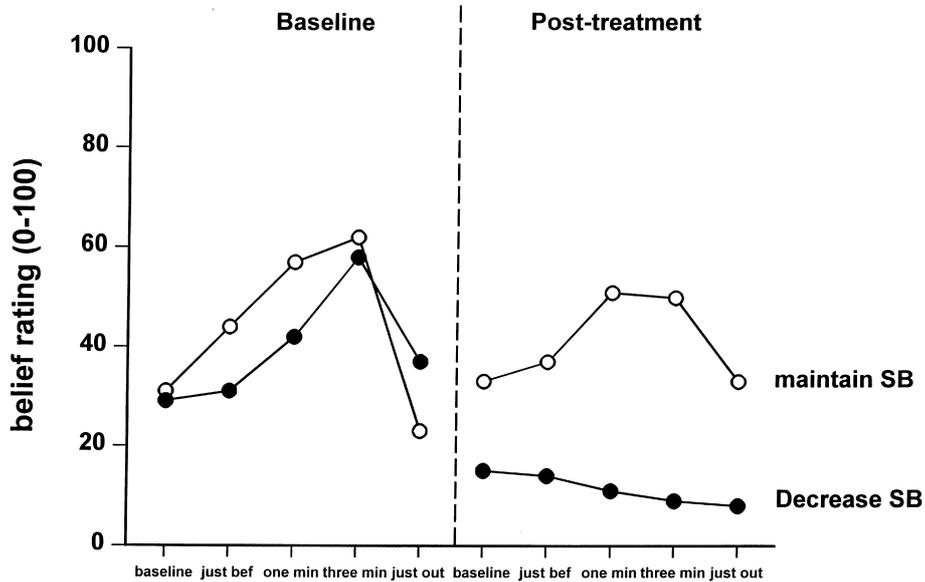
Fig. 3. Belief ratings (key beliefs) for the behaviour test prior to and following the experimental session.

(S.D. = 23.4), $t(16) = 1.7$, $p > 0.1$. These results indicate that the experience of anxiety during the *experimental session* was broadly similar, and that both manipulations had good credibility.

3.4. Ratings before the second BT

The two groups did not differ significantly in their ratings of anxiety and belief in the period immediately prior to the second behavioural test.

3.5. Anxiety and belief ratings during the pre and post- experimental behavioural test

Anxiety and belief ratings were both analysed using repeated measures analysis of variance, with two within factors (pre/post-experiment behaviour tests), three repeated measures, (the two ratings within each behaviour test together with the rating immediately on leaving the test situation) and one grouping factor (experimental condition). For anxiety ratings, ANOVA revealed a significant group effect ($F[1,16] = 6.66$, $p < 0.025$), a significant pre/post-effect ($F[1,16] = 19.4$, $p < 0.001$) and a significant repeats effect ($F[2,32] = 9.88$, $p < 0.001$). These effects were modified by a significant pre/post × group interaction ($F[1,16] = 19.425$, $p < 0.001$) and pre/post × repeats × group interaction ($F[2,32] = 4.3$, $p < 0.05$). These data are shown in Fig. 2. Bonferroni corrected t-tests show that the two groups did not differ in anxiety ratings in the pre-experiment behaviour test, and that the decreased safety behaviour group's ratings were significantly lower at each of the three measurement points of the second behaviour test.

In the case of belief ratings, ANOVA indicated that the overall effect of group was not significant ($F[1,16] = 3.6$, $p > 0.05$). There was a significant pre/post-effect ($F[1,16] = 18.04$, $p < 0.001$) and a significant repeats effect ($F[2,32] = 13.92$, $p < 0.001$). These effects were modified by a significant pre/post × group interaction ($F[1,16] = 13.4$, $p < 0.005$). The pre/post × repeats × group interaction was not significant ($F[2,32] = 1.06$, $p > 0.05$). These data are shown in Fig. 2. Bonferroni corrected t-tests again show that the groups did not differ during the pre-experimental session behaviour test, and that the decreased safety behaviour group's ratings were significantly lower at each of the three measurement points of the second behaviour test.

In each BT, retrospective ratings of the highest and lowest levels of anxiety and belief were made immediately on leaving the test situation. These data were analysed using repeated measures ANOVAs, with one within subject factor (pre/post-experimental manipulation) with experimental condition as a between subjects variable. The key effect is a pre/post × group interaction, which was significant for peak anxiety ratings ($F[1,16] = 14.32$, $p < 0.01$), least anxiety during the test ($F[1,16] = 7.97$, $p < 0.05$) and for peak belief ratings ($F[1,16] = 38.8$, $p < 0.0001$) and lowest belief rating during the test ($F[1,16] = 4.42$, $p < 0.05$). Bonferroni corrected t-tests again show that the groups differ significantly in the second BT minimum/maximum ratings but not the first. These results are illustrated in Fig. 4.

Taken together, these results indicate that, relative to those in the control condition, patients in the experimental group showed a significant decline in anxiety and panic-specific catastrophic belief between the two BTs.

3.6. Questionnaire data: impact of experimental manipulation

In order to evaluate the impact of the experimental procedures on questionnaire measures taken at the session immediately following the experimental session, analyses of covariance were carried out, with the first questionnaire score being used as covariate. These analyses indicated that there were significant post-experiment differences between the groups in depression scores (BDI score), $F[1,14] = 12.16$, $p < 0.005$, in panic frequency ratings, $F[1,14] = 11.49$, $p < 0.01$ and in agoraphobic cognitions, $F[1,14] = 6.125$, $p < 0.05$. There was a trend for symptoms of anxiety to differ (as indexed by the BAI), $F[1,14] = 4.2$, $p = 0.06$, and there was no difference in agoraphobic avoidance ratings, $F[1,14] = 1.51$, $p > 0.1$.

These results suggest that there were greater reductions in several of the clinical measures in the group who decreased safety behaviours relative to those who received a comparable amount of exposure. The absence of an effect in the agoraphobia ratings probably reflects the fact that this is a rating of actual behaviour, that the timescale between measures was very short and that experimental instructions to both groups included an explicit instruction not to change lifestyle in terms of entering feared situations. The differences noted suggest that the intervention, which was a very brief one primarily designed to reveal differences in the BT, was a powerful one with some effects on more global clinical measures.
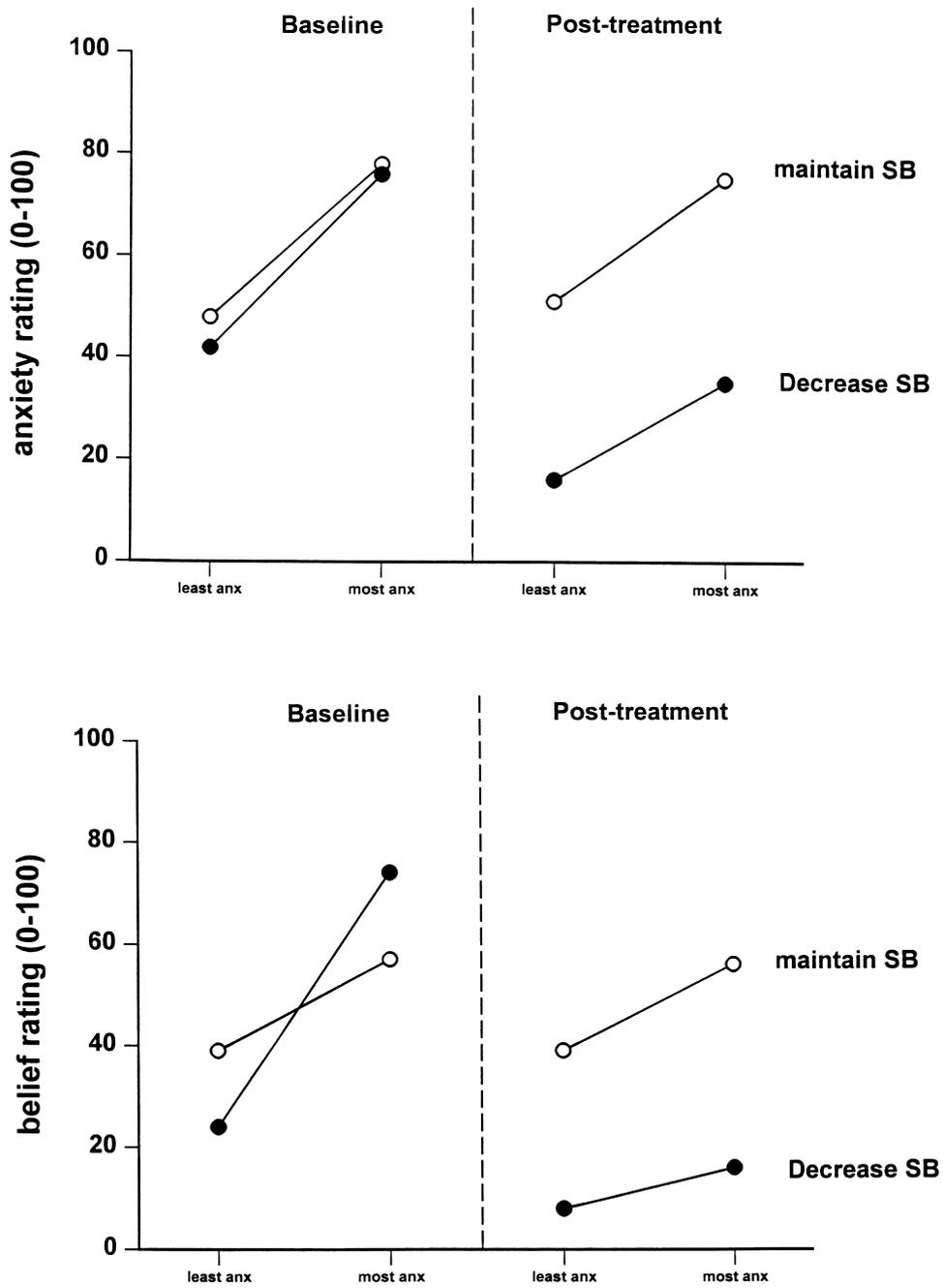
Fig. 4. Maximum and minimum anxiety and belief rating during the behaviour test prior to and after the experimental session.

4. Discussion

In this experiment, it was found that a brief (15 min) period of exposure to an agoraphobic situation during which the patient actively sought to decrease safety-seeking behaviours was associated with substantially greater belief change and fear reduction than a comparable period of exposure during which safety-seeking behaviours were maintained. This was evident in the results of behaviour test conducted within two days of the experimental session and on questionnaires; in the decreased safety behaviours group, the behaviour test had ceased to elicit anxiety increase, whereas the maintain-safety behaviours group had not changed in their responses. These findings are consistent with the cognitive-behavioural hypothesis that safety-seeking behaviours play an important role in maintaining patients negative beliefs and anxiety. The type of procedure used in the present experiment could be regarded as a particularly focused way of disconfirming the expectation that catastrophes may occur during a panic attack. The results are also consistent with the hypothesis that some of the effectiveness of exposure may be due to the disconfirmation of threat beliefs, and that the process of belief change can be facilitated by a specific focus on helping patients to reduce behaviours which maintain such beliefs.

Care was taken in the present experiment to ensure that (i) the procedures used did not differ in the degree to which they induced an expectancy of change; (ii) that the amount of exposure did not differ between conditions and (iii) the groups experienced a comparable amount of anxiety during the crucial experimental session. There were no significant differences between the groups in terms of clinical variables likely to be related to outcome. Allocation to experimental condition was carried out late in the experimental procedure to minimise experimenter effects. The sample size is rather small, and replication of this study would be welcome.

There are two aspects to the intervention used here. Previously identified safety-seeking behaviours were either stopped or maintained. The explicit rationale for stopping the safety-seeking behaviours was that, in doing so, the patient was more likely to be able to discover in the course of a period of exposure that the outcomes that they expected would not actually happen. In the comparison condition, the exposure was justified using an habituation rationale. It is not clear from the present study whether the difference obtained was a result of the relative decrease in safety-seeking behaviour or whether the specific rationale was necessary. In the course of conducting the study, we gained the impression that the results observed were a product of both, so that the specifically cognitive rationale made it possible for the patients to take advantage of the experience of disconfirmation. This issue would best be resolved by further experimental investigations.

Overall, the results are consistent with the hypothesis that safety-seeking behaviours can play a role in maintaining key threat beliefs. Such behaviours have the subjective effect of "saving" the person from the potential catastrophe, in the sense that the person comes to believe that the behaviour is all that stands between them and the feared disaster. This account can explain the potency of graded exposure, and provides a framework to understand the difficult and unresolved issue of the difference between a *coping* response and an *avoidance* response. That is, a coping response is one intended by the person to control anxiety; an avoidance response is intended to prevent perceived danger. If the cognitive account is correct, then avoidance

responses are those behaviours which are intended to avoid *disaster*, and these responses have the secondary effect of preventing the disconfirmation that would otherwise take place. On the other hand, coping responses are those behaviours brought to bear by a person intending to deal with *anxiety alone*, with no further fears about the consequences of the anxiety and so on. The second strategy is not catastrophe based, and therefore will not interfere with disconfirmation; in fact, it would be expected to enhance cognitive change because the strategy is based on an alternative, non-catastrophic account of symptoms and situations.

There is evidence that the type of processes identified in the present experiment generalise beyond panic to other anxiety problems where avoidance and safety behaviours are prominent such as social phobia (Wells et al., 1995; Clark, 1996). This may also be true in Obsessional problems (Salkovskis & Kirk, 1997), post-traumatic stress disorder (Ehlers & Steil, 1995) and specific phobias (Thorpe and Salkovskis, in press).

The clinical implications of the present findings are consistent with the cognitive theory of panic (Clark, 1988; Salkovskis, 1988; Salkovskis & Clark, 1991). The key issue in clinical and research work with avoidance behaviour concerns the question of *what the person is avoiding –* anxiety or catastrophe– and in the latter case, how the person believes that their behaviour prevents the feared catastrophes (Clark, 1994). The perceived focus of threat (e.g. imminent physical catastrophe or mental catastrophes in panic, social rejection and humiliation in social phobia) should determine both the phenomenology of the problem and the type of avoidance behaviours. A further important factor is how the person believes they can best prevent the perceived danger. Within this framework, safety-seeking behaviour can be divided into three main categories: (i) *avoidance* of the situations to prevent anticipated danger (e.g. the agoraphobic who avoids supermarkets, the social phobic who refuses invitations to social events); (ii) *escape* from a situation *when* anxiety occurs (e.g. leaving a shop once the symptoms of panic begin, making an excuse to leave a social situation); and (iii) *behaviours carried out within a situation* with the intention of actively preventing the feared catastrophe (e.g. when dizziness leads to the thought "I'll faint", holding onto another person or shopping trolley or sitting down). Some combination of all three types of safety-seeking can occur in the same individual. For example, it would not be unusual for an agoraphobic to say "If I had gone to the supermarket yesterday, then I would have passed out; If I had not left the smaller shop immediately the panic symptoms started I would have fainted; If I had not sat down once I got out, then I would have fainted". Different types of threat (and different perceptions of how each threat might come about) will result in different combinations of such safety-seeking behaviours. These in turn will require somewhat different measures to counter the threat belief. However, such therapy techniques will best be guided by patient and therapist sharing a clear understanding of how safety-seeking behaviours interact with threat beliefs to maintain the person's problems.

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