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The Importance of Behaviour in the Maintenance of Anxiety and Panic: A Cognitive Account

Paul M. Salkovskis

University of Oxford Department of Psychiatry, Warneford Hospital, Oxford

The theoretical and empirical basis of commonly accepted propositions concerning the role of behaviour in the practice of behavioural psychotherapy for anxiety problems is considered. A number of problems are identified, and an alternative, more explicitly cognitive hypothesis is described. According to this cognitive account, there is both a close relationship and specific interactions between "threat cognitions" and "*safety seeking behaviour*". For any individual, safety seeking behaviour arises out of, and is logically linked to, the perception of serious threat. Such behaviour may be anticipatory (avoidant) or consequent (escape). Because safety seeking behaviour is perceived to be preventative, and focused on especially negative consequences (e.g. death, illness, humiliation), spontaneous disconfirmation of threat is made particularly unlikely by such safety seeking behaviours. By preventing disconfirmation of threat-related cognitions, safety seeking behaviour may be a crucial factor in the maintenance of anxiety disorders. The implications of this view for the understanding and treatment of anxiety disorders are discussed.

The adoption of a subjective/cognitive element in the "three systems analysis" (Rachman and Hodgson, 1974) probably began the process of acceptance by behaviour therapy that cognitions might be involved in the maintenance of psychological problems. More recently, there has been further progression (or, as Blackburn, 1986, has suggested, an evolution), with "cognitive-behaviour therapy" increasingly becoming a dominating influence on the practice of behavioural psychotherapy (Hawton *et al.*, 1989). The reasons for the ready adoption of cognitive approaches by behaviour therapists are many (Salkovskis, 1986); perhaps most important has been

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Reprint requests to Dr P. M. Salkovskis, Department of Psychiatry, Warneford Hospital, Oxford OX3 7JX, England, UK.

the insistence of cognitive theorists that therapy be based on empirically testable hypotheses and the generally complementary relationship between previous behavioural theories and the newer cognitive ones. For example, Clark's (1986) cognitive analysis of the relationship between sensations perceived during panic attacks, their catastrophic misinterpretation and the consequent intense anxiety has proved an important complement to previous behavioural treatments of agoraphobia, in which panic attacks often could not be dealt with adequately by an exclusive focus on the modification of avoidant behaviour.

However, there remain a number of tensions between behaviour therapy and cognitive therapy at the theoretical level. Nowhere is this tension more apparent than in accounts of avoidance behaviour, anxiety and the role of exposure. The failure of cognitive theories of anxiety to provide a comprehensive account of the role of anxiety-related behaviour has probably been the greatest obstacle to the more general adoption of cognitive theories and treatments by behavioural psychotherapists. The result has been that, at times, cognitive-behavioural treatment of anxiety disorders has tended to be a hybrid of techniques drawn from both traditions, without a consistent set of guiding principles to facilitate assessment and intervention.

The purpose of the present paper is to reconsider the theoretical basis of the relationship between cognition and behaviour, and how this interaction relates to the cognitive-behavioural hypotheses of anxiety in which cognition of threat or danger is afforded a primary role. In order to do this, the behavioural theory of anxiety will be reviewed and evaluated, and some specific extensions proposed. The cognitive hypothesis is also compared with learning theory modifications based on a "preparedness" account intended to deal with some of the same problems. The clinical implications of the cognitive-behavioural hypothesis of avoidant behaviour will be considered.

The theoretical basis of behaviour therapy: some problems

The most influential behavioural theory of phobias is the two process model (Rachman, 1977), which proposes that phobias initially arise as a result of the phobic stimuli having previously been associated with aversive consequences or situations. The subsequent failure of phobias to extinguish is said to be due to both (i) the way in which avoidance behaviour prevents the occurrence of actual exposure to the feared stimuli and (ii) the way in which exposure to feared stimuli is terminated or shortened by escape behaviour (when exposure to the feared stimulus unavoidably occurs) (Rachman, 1977). In turn, the persistence of avoidance and escape behaviours is accounted for by the negative reinforcement associated with

the omission or termination of anxiety ("anxiety relief"). The clinical importance of this issue lies in the way exposure to feared stimuli is conducted; patients are invariably instructed to remain in the phobic situation *until their anxiety has begun to decline*, and never to leave the situation when their anxiety was increasing or even remained above the initial level (e.g. Mathews, Gelder and Johnston, 1981). This theoretical view formed the basis for the development of graded exposure as the treatment of choice for phobic anxiety (Rachman, 1990a). However, therapeutic success is a notoriously misleading way of evaluating theories, especially when the effectiveness of therapy has itself played a part in the development of that theory, as has been the case for exposure based treatment. More specific questions arising from behavioural theory are therefore considered next. (See also Rachman, 1990b, for a further critique in the context of simple phobias.)

Does escape in the face of anxiety strengthen anxiety and later escape?

Rachman and his colleagues have recently attempted to test directly the key theoretical premise that, once a phobia has developed, longer-term fear reduction (extinction) is prevented by escape behaviour (de Silva and Rachman, 1984; Rachman, Craske, Tallman and Solyom, 1986). Rachman and colleagues reasoned that, if the two process model is a valid basis to account for the persistence of phobic behaviour and for its effective treatment, then it should be possible to use an instructional set which involves a direct contrast between treatment by exposure on the one hand with an escape procedure. Subjects were told to enter the feared situation and either (i) remain until their anxiety declined (as in exposure based treatments) or (ii) leave when their anxiety rose to 70 on a hundred point scale (as is hypothesized to normally occur). Unfortunately, the manipulation did not fully succeed, and escape rarely took place in the experimental condition. Both groups showed anxiety reduction. There was, however, some evidence that the group given the escape option experienced (non-significantly) *greater* reductions of anxiety than those told to remain in the situation, an apparently paradoxical finding not consistent with the prediction of the behavioural model. Although methodological considerations limit the conclusiveness of these studies (e.g. the subjects allowed to "escape" seldom did so), they are nonetheless difficult to account for in terms of purely behavioural accounts; in particular, they call into question the standard "don't escape" instructions as a basic component of exposure treatment.

In fact, Rachman opts for a cognitive account, suggesting that perceived control over the possibility of panic may have been a key factor (cf. Rachman, 1990a, chapter 17; Sanderson, Rapee and Barlow, 1989). It remains

difficult to explain, given the low levels of actual escape, why the perception of control over escape should have produced an apparent anxiety reducing effect compared to the more normal situation experienced by these patients, in which they presumably would feel more readily able to escape (in that the experimental situation would be expected to produce a certain amount of social pressure not to escape; see also Rachman, 1990a, chapter 18, p. 277). Further research on this topic is clearly very important given that the results of the first two experiments were so tentative.

Why are anxiety control strategies other *than exposure sometimes helpful?*

If the conditioning hypothesis of anxiety is correct, then it also follows that procedures which the patient uses to control his or her response to fearful stimuli (or the stimuli themselves) should be counter-productive (including escape as outlined above, anxiety management treatments, distraction, cognitive therapy and so on). Indeed, Borkovec (1982) described the importance of what he termed "functional CS exposure", and of dealing with *any* behaviours which interfere with such exposure. He pointed out that, for extinction to take place in a rapid and enduring fashion, it was not only important for the patient to be exposed to the conditioned anxiety stimulus for long periods, but also for the patient to be actively "engaged" with the stimulus; i.e. attending to it. Later descriptions of "emotional processing" (Rachman, 1981) took a similar view, but extended the definition of the stimulus to include fear responses themselves. The idea of functional CS exposure makes sense in terms of the behavioural theory of the maintenance of phobic anxiety, and as such is a helpful clarification. However, it highlights a problem in accounting for the effectiveness of treatments which do involve anxiety control strategies (e.g. in the treatment of Panic Disorder without avoidance; Clark, 1988; social anxiety; Mattick and Peters, 1988; Mattick, Peters and Clarke, 1989),

The differentiation of "coping" from avoidance is an almost unmentioned problem which has been implicit in behaviour therapy from the early development of the "exposure principle" (Marks, 1987b) and its antecedents (Paul, 1966)[1]. Why do some behaviours such as distraction, which is said to constitute avoidance (and which therefore should be blocked in the course of effective exposure-based therapy), become an effective and valued component of a treatment such as anxiety management when presented to the patient as therapy? What is the difference between anxiety management procedures, which are effective in producing significant reductions in severe clinical anxiety, and similar strategies which such patients are reported as commonly using *prior* to treatment (Butler, Cullington, Hibbert, Klimes and Gelder, 1987). We need to be able to conceptualize this apparently

fundamental difference between *coping* behaviour and *avoidance* behaviour, when both can be topographically similar. The cognitive hypothesis of anxiety is able to offer a specific and empirically testable solution to this clinically crucial issue.

A cognitive account of avoidance

From a cognitive perspective, all anxiety-related phenomena arise from cognitions of threat or danger. The cognitive account of anxiety and phobias is also a learning account, consistent with current cognitive adaptations of learning theory (van den Hout and Merkelbach, 1991; Power, 1991, Rescorla, 1988). Thus, cognitive and behavioural formulations of the *acquisition* of anxiety problems and phobias are identical, only differing in the terminology used to describe what is learned. However, some differences emerge in terms of how anxiety is *maintained*. This includes the avoidant and escape behaviour characteristic of anxiety disorders. For example, according to the cognitive hypothesis of panic (Clark, 1986), the cognitions involved in the production of acute panic attacks involve the misinterpretation of bodily sensations as a sign of *imminent catastrophe*, such as interpreting palpitations as a sign of an impending heart attack, or unreality as a sign that one is about to lose control of one's behaviour and behave in a crazy or uncontrolled way. The hypothesis proposes not only that patients make such misinterpretations, but also that the catastrophic attribution is *strongly believed*. The person who believes that they are at considerable and imminent risk of experiencing a socially or physically threatening event of catastrophic proportions would, quite logically, attempt to prevent, avoid or escape the perceived catastrophe. As will be described later, there is nothing intrinsically abnormal about such "safety seeking behaviour".

Thus, the key issue distinguishing cognitive and behavioural accounts of avoidant and escape behaviour concerns *what is being avoided* and *what is sought*; that is, according to the behavioural account, avoidance is of *feared stimuli*, and the patient seeks relief from the *anxiety* which has become associated with particular stimuli. On the other hand, the alternative cognitive hypothesis proposes that the focus of avoidance concerns *feared outcomes or consequences perceived as threatening*, and the patient is seeking *safety*. The scope of "safety seeking behaviour" encompasses full avoidance of feared situations *and* behaviours occurring within feared situations.

Failure to learn from experience: a problem for both cognitive and behavioural accounts of anxiety associated with panic attacks?

In a detailed discussion of psychological perspectives on panic, Seligman (1988) posed an important question, which he described as "a central weak-

ness in both the Cognitive and Pavlovian theories of the anxiety disorders: neither theory clearly distinguishes the rational from the irrational, the conscious from the unconscious"[2]. Seligman argues the need for "two distinguishable processes, obeying different laws". Particularly relevant to anxiety disorders, he proposes, is "prepared" learning (which is biologically relevant, irrational and not readily modified by cognitive means). By implication, prepared learning is also relatively unconscious. He proposes as an example the case of the patient who has experienced regular panic attacks for a decade or more. This person

> may have had about 1000 panic attacks. In each one, on the cognitive account, he misinterpreted his racing heart as meaning that he was about to have a heart attack, and this was disconfirmed. Under the laws of disconfirmation that I know, he received ample evidence that his belief was false, and he should have given it up. On the Pavlovian account, he has had 1000 extinction trials in which the CS was not followed by the US-UR . . . His panics should have extinguished long ago . . . but neither theory explains why the belief did not extinguish in the face of disconfirmation long ago. What is it about cognitive therapeutic procedures which makes them effective disconfirmations, and about the Pavlovian exposure procedures that make them effective extinction procedures? (Seligman, 1988, p. 326).

Seligman thus highlights the apparent failure of people experiencing frequent panic attacks to take advantage of naturally occurring disconfirmations (extinction experiences). He suggests that his well-known concept of preparedness (Seliman, 1971) can account for this; he argues that prepared learning follows different rules to unprepared associations. Panic and most phobias, he suggests, involve highly prepared associations which are particularly resistant to extinction.

In order to account for the failure of anxious patients to take advantage of naturally occurring disconfirmations, the cognitive hypothesis postulates a functional and internally logical link between cognition and behaviour (Clark, 1988; Salkovskis, 1988, 1989c). Assuming for the moment that the same rules of logic apply to panic as to other areas of human behaviour, then the logical response to threat is to take action designed to prevent perceived negative outcomes that are believed to be imminent. That is, a person panicking because he believes that a catastrophe is imminent will do anything he believes he can to prevent the *catastrophe*. The person afraid of fainting sits, the person afraid of having a heart attack refrains from exercising, and so on. By doing so, the patient not only experiences immediate relief, but also unwittingly "protects" his or her belief of the potential for disaster associated with particular sensations. Each panic attack, rather than being experienced as a disconfirmation, becomes another example of

nearly being overtaken by disaster; "I have been close to fainting so many times: I have to be careful, or one of these times I won't be able to catch it." This means that the apparent failure of panic patients to take advantage of natural disconfirmations may be because the non-occurrence of feared catastrophes, when associated with safety seeking behaviour, does not constitute an actual disconfirmation, and may sometimes be perceived as confirmation of a "near miss".

Thus, the avoidant behaviour of panic patients is normal and logical, in the sense that the fact that the reader of this article avoids drinking poison is normal and logical. It could be argued that the reader has good reason for believing that drinking poison is harmful, despite the lack of direct experience of the effects of poison; but then, according to the cognitive hypothesis, the panic patient also has good reason for his or her catastrophic misinterpretations. This view also helps explain the reluctance of the panic patient to carry out exposure: for the panic patient to engage in unrestricted exposure, convincing evidence contradicting the feared catastrophe is required. The reader would require some specific encouragement to drink from a bottle marked "DANGER: DEADLY POISON", and might reasonably be apprehensive when doing so, even when convinced by, for example, another person modelling drinking from the bottle. Some of the beliefs held by anxiety patients are specific and idiosyncratic: for example, patients may overestimate their personal anxiety sensitivity, such that they believe that even a small amount of anxiety could result in heart failure for themselves. Although it may be difficult for an observer to understand the fear of an agoraphobic patient concerning entering the supermarket, this simply indicates that the observer does not share the idiosyncratic beliefs of the patient. Thus, a young child is unlikely to understand the horror his parent experiences on seeing him unscrewing the lid of a bottle of paraquat. It is easier to understand the avoidance of agoraphobic patients if one simply reflects upon why he or she will not enter a situation where he or she believes that death, loss of control or insanity may occur as a result.

This account of the cognitive basis of avoidant and escape behaviour has much in common with Rachman's (1984) safety signal perspective of agoraphobic avoidance, in that it specifically extends the scope of such safety signals to behaviours, which could best be described as "safety seeking behaviours". A major problem which must be faced, however, is that the proposed link between specific avoidance behaviours and cognition depends on a more mentalistic analysis of the "intention" of the behaviour. That is, the cognitive definition of avoidant behaviour (as opposed to adaptive "coping" behaviour which has the effect of reducing anxiety in the longer term) depends on an understanding of *what is being avoided* and *what the*

intention of avoidance is, apparently representing a major departure from previous behavioural conceptualizations of avoidance, although perhaps consistent with other recent developments in learning theory (e.g. Mackintosh, 1983; Power, 1991). However, before further conclusions can be drawn with any confidence, the relevance of the proposed behaviour-cognitions link needs to be examined more directly and the distinctions between avoidance and coping behaviour defined particularly carefully. Research on these topics is currently under way.

In summary, from a cognitive perspective, it is argued that panic is in fact a *rational* response to a given set of circumstances, and that there is fundamentally no difference between the type of anxiety and "reasoning" involved in panic as opposed to other types of anxiety. The evidential basis for the misinterpretations made in panic may be *inaccurate*, but as has already been described, the important point is that the patient experiencing panic has a logical basis for these misinterpretations. The rationality or irrationality of a person's beliefs to the *outside observer* is not the key issue. The degree of anxiety is proportional to the immediate personal and idiosyncratic appraisal of threat; in the case of panic attacks, the *catastrophic* nature of the misinterpretations generates spectacular levels of anxiety incomprehensible to the observer who does not share the patient's assumptions (and bodily sensations). An equivalent would be the victim of a practical joke who is held up by a masked figure carrying an inoperative replica weapon; the informed observer who is aware that the weapon is harmless might find the extreme fear and panic of the victim irrational. In the next section, the role of such behaviour in a range of anxiety problems will be briefly considered.

Clinical manifestations of safety seeking behaviour

The cognitive account described above deals not only with generalized avoidance and escape, but also explains some of the specific types of behaviour observed to be associated with particular anxiety problems. For example, it accounts for medical consultation and reassurance seeking in patients anxious about their health (Salkovskis, 1989a; Salkovskis and Warwick, 1986; Warwick and Salkovskis, 1990); the link between such behaviour and the fear of illness is obvious. Less obvious is the relationship between cognition and behaviour in people suffering from obsessional problems. However, the cognitive-behavioural analysis of obsessions (Salkovskis, 1985, 1989b) suggests that the cognitions involved concern the interpretation of the occurrence or content of intrusive thoughts as a sign of personal responsibility for further action. It therefore follows that the behaviours of such patients should reflect attempts to prevent themselves

from being responsible for adverse consequences that might arise from not acting on the content of the thought (prevention of harm through, for example, washing and checking). Often, this type of behaviour may manifest as *covert* "neutralizing" (Salkovskis and Westbrook, 1989). Another phenomenon of interest is concern over the actual occurrence of upsetting thoughts, leading to counter-productive attempts at *active thought suppression* (Lavy and van den Hout, 1990; Salkovskis, 1989b; Wegner, 1989). In social anxiety, self focus (i.e., away from the social context) may also be involved in the maintenance of clinical anxiety.

Recent work carried out by our own group suggests that similar cognition/behavioural interactions may even apply to simple phobics (usually regarded as the anxiety problem with the least cognitive involvement). For example, spider phobics report high belief ratings on items such as "The spider will attack me" and "If I can't escape from the spider I will go insane". Consideration of the behaviour of spider phobics (c.f. Watts and Sharrock, 1984) suggest that the behaviour of such people is often not simply directed at preventing contact with feared stimuli, but also at preventing disasters if such contact takes place. Research into this type of association may yet prove therapeutically and theoretically useful (Rachman, 1990b).

Clinical implications

Some of the most important implications of this proposed cognition-behaviour link concern treatment. In general, cognitive behavioural treatment emphasizes the need to deal with idiosyncratic factors that are bolstering the continued misinterpretation of bodily sensations. For example, a patient who becomes confused during panic describes mentally "holding on to my sanity". In each successive panic he becomes *more* convinced that he would have gone mad were it not for this effort. Another example is the patient who, hundreds of very severe panic attacks later, still believes in each new attack that she is about to go crazy, pass out or die. Clinically, questioning of such patients reveals that no disconfirmation has occurred because the patients believe that they have, in every instance, been able to take successful preventative action. As described above, each panic becomes a "near miss" and further confirmation of the risk. Once such behavioural responses are identified, the patient can be helped to begin the process of re-appraisal by withholding such protective responses and learning the true extent of risk. In many instances, this may involve suggesting to the patient that they challenge their worries by *actively trying* to bring about the feared disaster; for example, going into the supermarket and trying to faint or trying to go mad. This helps the patient to discover that their efforts to

prevent these disasters have been misdirected; this can also help the patient to then re-interpret their usually considerable past experiences of such anxiety provoking situations as true disconfirmations instead of "near misses". This particular type of association might be a fruitful one for research investigations, as controlling one's mind is a common response in panic patients as well as other groups, including non-clinical subjects. Given the readiness with which patients can reproduce this type of behaviour as either safety seeking or coping when requested in the laboratory, experiments concerning the use of the same degree of effort directed at different targets (i.e. reduction of anxiety vs preservation of sanity) could be used to assess the validity of the cognitive basis of such behaviour and its putative anxiety-preserving effects when used as a safety seeking behaviour.

The present analysis also suggests ways of combining cognitive procedures and brief exposure in a way which should be particularly effective in bringing about belief change without *repeated* and *prolonged* exposure being necessary. Thus, exposure sessions are devised in the manner of behavioural experiments, intended as an information gathering exercise directed towards invalidation of threat-related interpretations. Most previous studies in which cognitive and behavioural treatments have been combined (such as those reviewed in Marks, 1987a, b) have used cognitive procedures as a way of dealing with general and "background" life stresses, most of which tend not to be directly relevant to the specific experience of anxiety subject to exposure. The particular strategy of using exposure as an exercise in testing alternative non-threatening interpretations of experience would be predicted to succeed better than brief exposure with "supplementary" (threat-irrelevant) cognitive change procedures. That is, such a study should show that "general" cognitive therapy combined with exposure has an additive effect, whilst "anxiety focused" cognitive therapy would be expected to multiply the effect of exposure, resulting in maximal cognitive change through behavioural experiments. Thus, according to the cognitive hypothesis, the value of behavioural experiments transcends mere exposure; such experiments allow patient and therapist to collaborate in the gathering of new information assessing the validity of non-threatening explanation of anxiety and associated symptoms.

Conclusion

The difference between the account outlined in this article and previous behavioural explanations is that, in anxiety disorder, it is not invariably the feared stimuli that are being avoided, but may more commonly be threatening consequences of particular situations or of anxiety itself. In most instances, if a person is convinced that the end-point of exposure to a feared

stimulus will be anxiety alone, then avoidance is relatively unlikely, other than the desultory avoidance normally associated with mildly unpleasant emotional states. If, on the other hand, the person is anxious as a result of a perceived threatening or catastrophic event, then avoidance of that threat is both rational and advisable. An important extension of this view concerns the issue of anxiety sensitivity i.e. the tendency to believe that anxiety *per se* is dangerous, which has been demonstrated to be a feature of panic, especially panic associated with agoraphobia (McNally and Lorenz, 1987; Reiss, Peterson, Gursky and McNally 1986). Anxiety will be the focus of avoidance *if the subject strongly believes that anxiety can itself result in harm*. That is, the person who believes that anxiety itself can result in serious physical or social harm would reasonably avoid situations where he or she might become anxious. This phenomenon would be expected to be a major mechanism involved in the readiness to acquire phobic behaviour; for example, the transition from Panic Disorder to situational (agoraphobic) avoidance.

"Safety seeking behaviours" as described here are hypothesized as having the subjective effect of "saving" the person from the threat involved in anxious stimuli and situations, in the sense that the person comes to believe that their behaviour stands (and has stood) between them and a likely danger. It is not proposed that learning theory approaches to avoidance behaviour be abandoned, but rather that it be the incorporation of cognitive accounts of how learning takes place and what is learned (Rescorla, 1988; see also Power, 1991; van den Hout and Merkelbach, 1991).

The cognitive hypothesis of avoidance may help account for the extraordinary efficacy of intensive graded exposure (e.g. Ost, 1989; Ost, Salkovskis and Hellstrom, 1990), and provides a framework to understand the key issue of the difference between a *coping* (adaptive) response and an *avoidance* (anxiety maintaining) response. The key issue concerns the question of *what the person is avoiding*. If the cognitive account is correct, then avoidance responses are those behaviours which are intended to avoid *disaster*, but thereby also 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 intended to prevent threat, 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-threatening account of symptoms and situations which receives logical support from the patients' experience.

Notes

1. The theoretical inconsistency here may have been masked by the way that behavioural theories gradually shifted to pure exposure views away from theories based on reciprocal inhibition (Wolpe, 1958), which had originally *required* a competing anxiety-inhibiting response.

2. At least some of these issues concerning the relative inaccessibility of cognitive processes, discussed in detail by Williams *et al.* (1988) can be resolved by making the important distinction between the measurement of cognitive *processes* and the cognitive *events* which can be regarded as the outcome of those processes. It should be possible to measure reliably both aspects of cognitive functioning.

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