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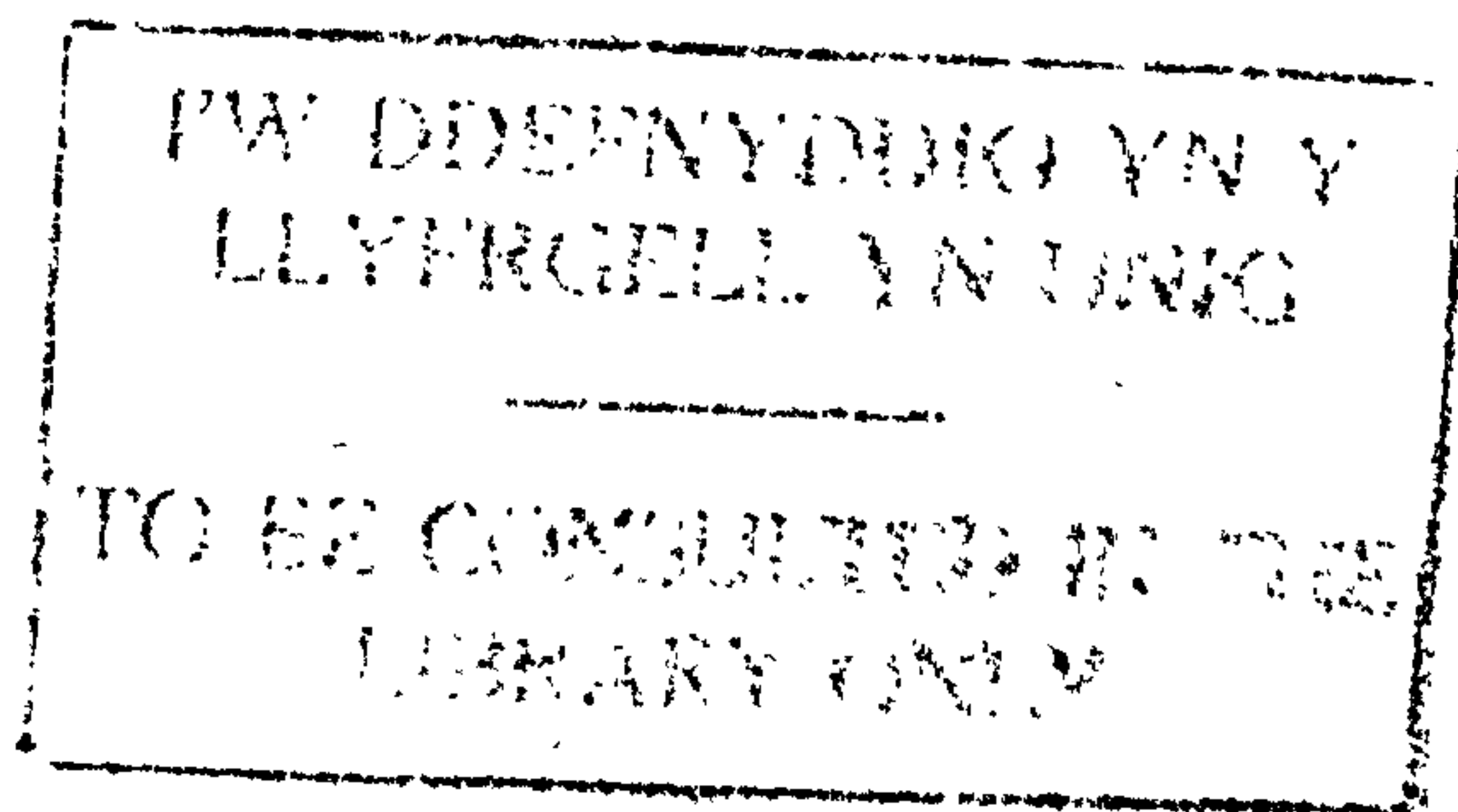
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**THE MEASUREMENT AND MODIFICATION OF
DELUSIONAL BEHAVIOUR**

Paul D. J. Chadwick

Ph.D

1989



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Summary

It has been proposed that delusional thinking may be on a continuum with normal behaviour and can be assessed by taking account of factors such as the client's degree of belief conviction or the extent of preoccupation with the belief. In the present research a number of measures were employed to assess the delusional thinking of people diagnosed as schizophrenic. Two interventions were employed: (i) a structured verbal challenge, and (ii) a reality test in which the belief was subject to an empirical test. The research offered support for the continuum view of delusional behaviour, and demonstrated that a number of aspects of delusional behaviour, including the degree of conviction with which the belief is held, are open to modification.

' On the one hand, numerous speech stimulations have removed us from reality, and we must always remember this in order not to distort our attitude to reality. On the other hand, it is precisely speech that has made us human.' (Pavlov, 1941).

CHAPTER I. VERBAL SELF-REGULATION.

Introduction

A major focus within contemporary psychology has been on language, not merely as a means of communication, but also as a way of directing behaviour (e.g. Vygotsky, 1962; 1978). The process of learning to describe our environment alters our relation to it, because in so doing we organize and structure our subsequent interactions. Chapter I is concerned with this regulatory function of language. The chapter begins by detailing some recent developments within the behavioural tradition which suggest that language, and particularly its regulatory function, might be responsible for some of the qualitative differences between human behaviour and the behaviour of non-human species. Moreover, these findings suggest that the emergence of the regulatory function of language in early childhood is responsible for qualitative changes in human behaviour. For instance, simple instructional interventions which bring behaviour under verbal control can lead to surprising and dramatic changes in behaviour. Vygotsky's account for the emergence of the regulatory function of language is discussed. The central tenet of Vygotsky's theory is that the ability to regulate one's behaviour verbally is the end product of a complex developmental sequence which is fostered by the verbal community.

The second half of Chapter I is concerned with the clinical importance of verbal regulation. It is suggested that one of the major reasons for the 'cognitive revolution' within clinical psychology (Mahoney, 1974) was the failure of behaviour therapists and analysts to address themselves to the issue of verbal behaviour. In recognition of the potency of the regulatory function of language, there have been a number of attempts to understand many clinical problems as being maintained by the

ways in which clients describe themselves and their interactions with others. A number of clinical theories are discussed in which verbal behaviour is given a central role. These include: Personal Construct Theory, Rational Emotive Therapy, Beck's Cognitive Theory of Depression, Attribution Theory and Self-Instructional Training. It is argued that in spite of their theoretical differences, these approaches are alike in two respects: first, in the importance they attach to the way in which clients describe themselves and their dealings with others, and second, the methods they recommend for changing these verbalizations. One issue which arises a number of times during the chapter is the assumption, sometimes explicit and sometimes implicit, that the beliefs and descriptions formed by the clinical population are unlike those of the population in general. For example, the negative beliefs of people suffering from depression have been described as 'irrational'. Chapter I concludes by referring to the literature on the formation and maintenance of beliefs in the 'normal' population. This makes clear that the processes by which normal beliefs are formed and maintained are fraught with bias and error.

1.1 Some human-animal differences on schedules of reinforcement.

In his science of human behaviour B.F. Skinner emphasised the importance of environmental consequences which increased the probability of responses, from a given class, which they follow. Such consequences are termed positive reinforcers. The behaviour of many non-human species can be maintained for long periods of time when reinforcers are scheduled to occur intermittently, either on the basis of number of responses (ratio schedules) or the passage of time (interval schedules). Animal performance on schedules of reinforcement is typically orderly and replicable within and across species (Ferster & Skinner, 1957). Consider, for example, performance on the fixed- interval (FI) schedule. On an FI schedule, the first response is reinforced following a pre-determined interval since the previous reinforcement, irrespective of the number of responses during the interval. In many species a typical pattern of responding emerges under an FI contingency; a

pause after reinforcement, followed by an accelerating rate of responding culminating in the next reinforcement (Ferster & Skinner, 1957). This response pattern has been referred to as the 'scallop'. Furthermore, performance can be manipulated reliably by systematic changes in such variables as the temporal parameter (Skinner, 1938) and the reinforcement magnitude (Staddon, 1974).

In contrast, human schedule performance frequently bears little resemblance to that of any other animal species either in terms of response pattern or sensitivity to the schedule (Lowe, 1979). Typically humans do not produce the classic 'scallop' pattern of responding on FI schedules. Instead, they tend towards either a high and continuous rate of responding between reinforcers, or a low rate of just one or two responses at the end of the schedule interval (Weiner, 1965). It is common for both response patterns to be seen in the same study (e.g. Leander et al., 1968; Lippman & Meyer, 1967). Such FI behaviour is unlike that of any other species. Humans have also been found to perform uniquely on other types of reinforcement schedules. On a fixed-ratio (FR) schedule, reinforcement is made available after a specified number of responses following the previous reinforcement. Whereas animal performance varies in accordance with the schedule value, human responses on FR schedules tend towards a steady high rate that is unrelated to the schedule parameter (Weiner, 1965).

This insensitivity to certain schedules of reinforcement also extends to changes from one schedule to another. For example, if human subjects perform first on FR schedules, the constant high rate of responding persists unaltered for many sessions even after the schedule is changed to an FI. Alternatively, a history on a schedule which produces a low rate of responding (such as a differential reinforcement of low rate, or DRL schedule) produces the low rate pattern of responding on subsequent FI schedules (Weiner, 1964, 1969). Such perseveration is unknown in animal schedule behaviour, and has been called 'behavioural rigidity' (Lowe, 1979).

In attempting to account for the idiosyncratic nature of human schedule performance, Catania (1981) suggested that much human schedule performance may be governed by the experimenter's instructions rather than by the reinforcement contingencies. However, this explanation does not account for human-animal differences in studies where experimenter instructions are minimal. Lowe (1979) proposed that human schedule performance reflected not simply instruction or rule following, but rule formation. That is, human subjects formulated their own descriptions of the reinforcement contingencies, and it was these verbalisations which directed their subsequent behaviour. Such behaviour was therefore not contingency shaped, but rule governed (Skinner, 1969). Contingency shaped behaviour occurs when an organism acts in a given way with a given probability because the behaviour has been followed by a given type of consequence in the past. In contrast, rule governed behaviour follows a formulation of the relation between a response and its consequences (*ibid.*). Skinner contended that whereas with contingency shaped behaviour the control tended to be non-verbal, with rule governed behaviour the control was primarily verbal:

There is now a large body of support for the hypothesis that human schedule performance is rule governed, and that this is why it differs from animal schedule performance. First, on FI schedules, pre-verbal infants have been shown to produce the 'scallop' pattern of responding so typical of the behaviour of other species. Pre-verbal infants have also demonstrated sensitivity to schedule parameters (Lowe, Beasty & Bentall, 1983). Second, the progression from such animal-like responding, through a transitional phase, to adult responding has been shown to be language related (Bentall & Lowe, 1982). These findings are consistent with the argument that mature human schedule performance is rule governed. Subsequent work has strengthened this argument further. Children at the transitional stage of development, whose schedule performance was neither animal-like nor like that of older children, were found to produce adult patterns of responding with the aid of a verbal intervention (Bentall, Lowe & Beasty, 1985). Reciprocally, it has been shown

that preventing adults from forming rules about the contingencies can result in animal-like responding (Lowe, Harzem & Bagshaw, 1978).

In summary, it would appear that mature human performance on certain schedules of reinforcement is unlike that of any other species. At least part of the reason for this difference would seem to be the peculiarly human ability to form verbal descriptions of the environment, and subsequently to act in accordance with these descriptions. How then, might this self-regulatory function develop?

1.2 The development of self-regulation.

Vygotsky (1962) stated that 'the most significant moment in the course of intellectual development, which gives rise to purely human forms of practical and abstract intelligence, occurs when speech and practical activity, two previously completely independent lines of development, converge' (p. 24). Vygotsky argued that with the coming together of speech and activity (or tool use), behaviour was 'transformed and organised along entirely new lines' which were peculiarly human. One example of this transformation would be the metamorphosis of human schedule performance with the development of language. An additional example of this transformation was provided by Luria (1961). Children aged between 12 and 18 months were given small red boxes which contained sweets and small green boxes which did not. In practice the children experienced great difficulty in selecting the red box consistently; moreover, when such discrimination was attained it was extinguished quickly. However, if the experimenter named the coloured boxes 'red' and 'green', the child was quickly able to establish choice behaviour which lasted for up to one week. In addition the names were transferred readily to other objects which the child began to classify in a similar way. (Whilst the Lurian example testifies to the potency of speech in transforming and directing activity, there is some evidence that initially verbal control can function at a pre-semantic level; Luria called such-regulation 'impulsive'. For instance, when required to press a bulb twice, children responded

successfully to the command 'Go! Go!', but tended to produce only one long protracted movement to the command 'I shall press twice'. Also whilst the regulator 'Press' was a successful inhibitor in that the children responded only once, 'Don't press' actually disinhibited responding.)

Clearly, simple verbal interventions can have a quite surprising effect on behaviour. Vygotsky argued that mature self-regulation - both forming and following verbal descriptions - had its developmental roots in instruction governed behaviour. To Vygotsky self-regulation was of social origin, and its development was fostered by the verbal community. Vygotsky called the process by which self-regulation emerged 'internalisation', and identified four dynamic developmental stages. Initially, the child's behaviour was regulated by the instructions of others. Subsequently, before being able to master his or her own behaviour, the child began to master his or her surroundings with the help of speech. This produced 'new relations with the environment in addition to the new organisation of behaviour itself' (Vygotsky, 1962, p.25). Vygotsky argued that the major change in the child's ability to use language as an aid to problem-solving occurred when socialised speech was turned inward - that is, when speech which hitherto the child had directed towards others was directed to himself or herself. This change from interpersonal speech to intrapersonal speech formed the essence of the Vygotskyian notion of internalisation. Only finally was the child able to regulate his or her own behaviour. At first this self-regulation was overt, until at the last stage of internalisation the regulation became covert.

Vygotsky called those behaviours which involved the regulatory (or planning) function of speech the 'higher psychological processes', and believed them to be the distinguishing feature of human psychology. The peculiarly human capacity to use speech to guide behaviour freed the individual from immediate environmental control, and rendered aspects of human behaviour qualitatively unlike that of any other species (p.57). By placing the development of higher psychological processes firmly within the context of a verbal community,

Vygotsky arrived at a new formulation of the relationship between learning and development. Traditionally a child's developmental level was assessed by various tests, which the child was required to solve alone. In Vygotsky's terms, this measured the child's actual developmental level. However, Vygotsky proposed that assessing what the child can do with the help of others was even more indicative of their mental development. Vygotsky illustrated this point by the example of two children, each with a chronological age of ten and an actual developmental level (i.e. a mental development) of eight. This meant that they were able to perform independently tasks up to the degree of difficulty standardised for the eight-year-old level. These two children could then be shown different ways of solving problems which they were unable to solve alone. If, with assistance, one child was able to solve problems up to a twelve-year-old level, and the other up to a nine-year-old, Vygotsky argued that the two children could not be said to be at the same developmental level.

Vygotsky called the difference between a child's performance without assistance and with assistance the zone of proximal development. Thus, the zone of proximal development defined the child's potential development, because it contained those functions which though still embryonic would soon be mature. Vygotsky argued that an essential feature of learning was that it created the zone of proximal development. That is, that through interaction with others the child was able to utilize functions still in an embryonic state. Vygotsky believed that all higher psychological processes appeared first during social interaction; subsequently they underwent internalisation. Once internalised, such skills become part of the child's behavioural repertoire, and would be reflected in the child's new level of actual development. In this way, learning and development are seen as interwoven dynamically.

It now becomes possible to see the human-animal differences on schedule performance, with which this chapter began, as just one case of a more general phenomenon. Through internalisation, Vygotsky offered an account of how all higher

psychological processes developed. His work provides a developmental framework from within which to understand how speech comes to regulate behaviour, and how in the process the behaviour is changed qualitatively. The integral part played in this process by the verbal community, and the concept of the zone of proximal development, have implications for educator and clinician alike.

1.3 The clinical importance of self-regulation.

When Ullman and Krasner (1969) suggested that abnormal behaviour was learned, maintained and altered in the same ways as normal behaviour, a new kind of therapy was born. Behaviour therapy, as it became known, was derived from the work of Skinner, and assumed that all behaviour could be seen as adjustments to particular histories of reinforcement, and therefore was open to a functional analysis (Skinner, 1938). Skinner was well aware that covert behaviour was a necessary part of a functional analysis, as his distinction between rule governed and contingency shaped behaviour made clear. In spite of this, behaviour therapists and analysts failed consistently to address the issue of covert events, preferring instead to deal with observable variables. It was noticed that it was behaviour therapists and analysts who ignored private events (London, 1972); there was nothing in the theoretical underpinnings of behaviour therapy which required this (Lowe & Higson, 1983). The neglect of covert behaviour has been identified as a major contributing factor to the emergence of the 'cognitive revolution' within clinical psychology (Mahoney, 1974).

Behaviour therapy had scored some notable successes. In the treatment of autistic children and the mentally handicapped it proved to be more effective than traditional psychotherapy (Kazdin & Hersen, 1980). However, even where great claims had been made for behaviour therapy, there were upper limits to its effectiveness (Hersen, 1979). For instance, although phobias have been treated successfully by techniques such as systematic desensitisation (a graduated introduction of the phobic stimulus) and flooding (a sudden and total introduction of the phobic

stimulus), agoraphobia has proved resistant to such techniques (Zitrin et al., 1980). Much of the traditional behaviour therapy research was plagued by methodological problems, such as the use of sub-clinical populations, so casting doubt upon the generality of some of the findings. For instance, while modelling techniques failed to produce a behaviour change in unassertive college students (McFall & Twentyman, 1977) it did so in similarly unassertive chronic psychiatric patients (Hersen et al., 1973). Other methodological shortcomings included a lack of assessment for generalisation of behaviour change outside the clinical setting, and a shortage of long term follow-up data to assess for maintenance (Kazdin and Hersen, 1980).

Central to the 'cognitive revolution' was an interest in covert verbal behaviour, particularly as an organizing influence on behaviour. Clinicians became concerned not simply with isolating and understanding the particular environmental contingencies brought to bear upon the individual, but also with how the individual interpreted his or her surroundings. In recognition of the potency of the regulatory function of language, a number of attempts were made to understand many clinical problems as being maintained by the ways in which clients described themselves and their dealings with others (e.g. Abramson, Seligman and Teasdale, 1978; Meichenbaum, 1977).

Covert verbal behaviour has become a central variable within clinical psychology. Clinicians from a variety of theoretical backgrounds have stressed the importance of self-regulation, and looked for ways of changing a client's covert and overt verbal behaviour.

Personal Construct Theory.

In 1955, George Kelly forwarded his Personal Construct Theory (PCT). Kelly based his theory on the premiss that psychologists should view the behaviour of all people in the way they viewed their own behaviour - that is, as scientists, ever seeking to predict and control those events with which they were involved. Kelly felt that this most certainly was what he himself was doing. Kelly considered that traditionally psychologists had

viewed the individual, as physicists had viewed objects, as being inert, and therefore requiring either 'pushing' or 'pulling' into action (Kelly, 1955, p.36). To a 'push theorist' (such as an early behaviourist), the environment provided the necessary stimulation; to a 'pull theorist' (such as Freud) the impetus hailed from the person's biological needs and drives. Kelly's objection to both was that they suggested that it was the stimulus or the need which accounted for the action, rather than the individual. It was Kelly's express purpose to forward a theory of personality which portrayed the individual as dynamic and able to provide his or her own impetus.

Central to PCT was the idea that people do not respond to a stimulus, but to their interpretation or construction of that stimulus:

' Man looks at the world through transparent patterns or templates which he creates and then attempts to fit over the realities of which the world is composed.' (Kelly, 1955, p.8)

Kelly used the word constructs to refer to those verbalisations which people formed to account for their experiences. A construct is formed by considering not only similar objects or events (as would be the case with a concept), but also dissimilar. A construct can thus be thought of as a distinguishing feature with an explicit standard of comparison. For example, the construct 'Martin is pleasant' entails the view that Martin is not unpleasant or nasty. This construal of Martin would be derived (rightly or wrongly) from experience of Martin, and would be instrumental in directing future behaviour towards him. If Martin turned out consistently to be unpleasant, the construal of him as pleasant would need to be modified or abandoned. Because the process of construing is one of interpretation guided by past experience, while one person may construe Martin as pleasant, another may construe him as unpleasant.

Whilst PCT concerned all behaviour (Kelly would say his theory has a wide range of convenience), its intended focus was in the realm of psychotherapy. Whatever the nature of the client's problem, Kelly stressed that it was never the place of the therapist

to project particular constructs onto the client. Rather, the therapist sought to assist the client in identifying and testing the validity of particular constructs. Because both therapist and client were 'scientists', therapy was conducted within an atmosphere of experimentation. The therapist encouraged the client to consider new ways of describing or construing his or her environment and made validating data available during therapy so that these constructs could be reality tested.

The therapeutic goal of personal construct therapy was to enable the client to exercise improved self-control. In order to achieve this, clients were asked to consider alternative ways of viewing both themselves and their dealings with others. Kelly hoped that this would promote the understanding that people are, in an important sense, 'self inventing and that they are not necessarily trapped forever inside their own autobiography and their customary thought and behaviour' (Bannister and Fransella, 1980, p.139). By highlighting in this way the causal status of constructs, and by showing further how they can be generated and tested, the client is given the wherewithal for self-control. The client's own behaviour is the one variable common to any situation which is, potentially at least, under his or her control (Adams-Weber, 1979, p.130).

Many of the central aspects of PCT have appeared in subsequent therapies, particularly those which followed the cognitive revolution. Before it was fashionable to do so, Kelly tackled head on the clinical implications of verbal self-control and self-regulation. Attention has tended to focus on specific aspects of his theory, such as his attempt to measure constructs via his Repertory Grid Test, but little credit is given him by those theorists who have since adopted (knowingly or unknowingly) many of his central ideas. There were certainly problems with Kelly's theory; for instance, PCT lacked a plausible developmental account of how people first came to construe events at all. But approaching Kelly from an informed developmental account of self-regulation, such as the one provided by Vygotsky, can be a rewarding exercise. The essential feature of Kelly's therapy is to teach the client how to regulate most effectively his or her own

behaviour. To achieve this, the client is first made aware that constructs, or verbal descriptions of the world, can exert a profound influence upon his or her subsequent behaviours and interactions with others. This awareness is a critical first step along the road to self-control. What then remains is for the client to realize that he or she can be ensnared or misled by particular descriptions; constructs are usually influential, and occasionally fallible. For this reason, clients are taught to be critical of their construals and to submit them to empirical test whenever possible.

Rational Emotive Therapy.

Another therapy to emphasise the importance of verbal descriptions of oneself and one's interactions with others is Rational Emotive Therapy (RET: Ellis, 1957). Since its conception, RET has undergone numerous reformulations, and has adopted a multitude of different therapeutic techniques. RET was conceived as a means of altering key irrational beliefs, which Ellis felt were at the bottom of many clinical problems. An irrational belief has been defined as 'related to magical, empirically unvalidated hypotheses for which there is not...any factual evidence' (Ellis, 1973, p.6). The statement 'It is easier to avoid than to face certain life difficulties and responsibilities' is one of the eleven core irrational beliefs identified by Ellis (Ellis, 1962, p.79). Unfortunately, the definition of such beliefs is weak, and would include statements such as 'one should love God' and 'you should respect your parents' (Zettle and Hayes, 1980). RET also lacks an adequate explanation of the formation of irrational beliefs, although this is less of a problem because it is quite possible to account for their appearance as being fostered through social interaction with the verbal community (cf. DiGiuseppe et al., 1977).

In his RET Ellis certainly attached a critical importance to self-regulation. Ellis went one stage further, however, by specifying which particular verbalizations were problematical (i.e. the irrational beliefs). He also stated why irrational beliefs were a problem, arguing that they were the cause of anxiety and

emotional arousal. Whilst these additions serve to distinguish RET from similar theories, they also seem to be its Achilles heel. Ellis's irrational beliefs can neither be defined nor measured satisfactorily (Zettle & Hayes, 1980), nor has it been shown clearly that they cause anxiety and arousal (e.g. Rogers & Craighead, 1977). As such, RET can add little to our theoretical understanding of the way verbal self-statements underlie many clinical disorders.

Procedurally RET is also beset by difficulties. Ellis (1977) stated that of the '50 or 60 different kinds of cognitive procedures in therapy' RET attempted to use them all. Clearly RET does not have a specific procedure; rather, rational emotive therapists borrow from any and all existing therapies. Its unity comes not from the means, but the end - the pursuit of a common goal. This goal is to point out to clients that maladaptive behaviours are caused primarily by irrational beliefs, and to teach clients how to test these assumptions. Like PCT, RET is concerned with imparting understanding and improved control of the self-regulatory function; the difference is that a rational emotive therapist would attempt to distil down the clinical problem to one, or more, of the core irrational beliefs. Unfortunately, the problems with defining and measuring irrational beliefs cannot be avoided.

Cognitive Theory of Depression.

Heavily influenced by Ellis, Beck put forward his now famous cognitive theory of depression (1967, 1976). Like Kelly and Ellis, Beck too emphasised the importance of self-regulation, a view he traced to the early stoic philosophers, such as Epictetus, who stated that 'Men are disturbed not by things but by the views which they take of them'. Another historical influence was Adler, who also stressed the importance of self-regulation: 'We do not suffer from the shock of our experiences - the so-called trauma - but we make out of them just what suits our purposes. We are self-determined by the meaning we give to our experiences' (Adler, 1958, p.14, as quoted by Beck, Rush, Shaw & Emery, 1979). To Beck, depression was primarily a disturbance in cognition, and could be understood in terms of three postulates; (i) the cognitive

triad, (ii) schemas, and (iii) cognitive errors (faulty information processing).

The cognitive triad comprises negative views about oneself, one's dealings with others, and the future. The negative self image comes about through the client's tendency to see bad experiences as reflecting some defect in himself or herself. The tendency to view interactions with others negatively, can be seen in those instances when the client construes situations negatively, even though more plausible alternative interpretations exist. When projecting into the future, the client predicts that his or her present difficulties or suffering will continue indefinitely. Beck's model placed other indices of depression, such as emotional states, as consequences of these negative cognitive patterns. A client who thinks incorrectly that he is being rejected will react with the same sadness and anger as occurs with actual rejection (Beck et al., 1979).

The second of Beck's postulates - schemas - serves to explain why negative attitudes persist in the face of contradictory experiences. Beck has defined a schema as an abstract and generalisable rule regarding regularities among internal representations of events, which serve to guide behaviour and direct the assimilation of incoming behaviour (Beck, 1976). Whilst some theorists might be uncomfortable with Beck's 'language game', this should not obscure the fact that essentially Beck is referring to the regulatory role of language. His point is that particular descriptions of events become fixed and over-generalised, so that they guide subsequent behaviour in a whole host of situations. Schemas can be thought of as a form of 'cognitive style', where what is meant is that the individual forms similar types of description about a number of different events. The difficulty for Beck is to explain where schemas come from in the first place (this point will be discussed more fully later in this chapter). Over-generalisation is an example of faulty information processing, which is the third of Beck's postulates. Beck argued that over-generalisation was an example of 'primitive', as opposed to 'mature', thinking. In primitive thinking, which typified depression, the 'complexity, variability, and diversity of human

experiences and behaviour are reduced into a few crude categories' (Beck et al., 1979). In Kellyian terms, this meant that a small number of core constructs had a large range of convenience.

Practically Beck's therapy was problem orientated. Beck distinguished his approach to therapy from traditional psychotherapy on two counts. First, like Kelly's 'man the scientist', the therapist was actively involved in a process of 'collaborative empiricism'. Second, unlike the psychoanalytic interest in the distant past, Beck was concerned primarily with 'here and now' problems. Within Beck's therapy the initial task facing the therapist was to obtain a detailed picture of the client's life situation, and of the way the client described his or her experiences. The therapist then looked for the relationship between particular aspects of the client's life situation, thought and emotional distress. This relationship must be made clear to the client. Beck recommended doing this by waiting for a sudden mood change on the client's behalf, pointing it out to the client, and asking what he or she had been thinking immediately prior to the mood shift. Thus, to Beck, an important part of insight is the recognition that self-statements have an important influence on the way people behave and feel.

By focusing on the way language governs behaviour it becomes possible to programme for both maintenance and generalisation. The client must learn to monitor and evaluate his or her own self-talk. In the first instance, this entails being able to recognize negative thoughts and being able to test them. To encourage this process, the therapist asks the client to suspend his or her conviction that a particular negative thought is undeniably true, and instead to view it as a hypothesis to be tested. Beck argued that in many cases the client's negative thoughts stemmed from an underlying 'maladaptive assumption'. The therapist must identify one if one exists. Maladaptive assumptions are similar to Ellis' irrational beliefs, some examples being 'To be happy I must be accepted by all people at all times', and 'I can't live without you'. For instance, the negative thoughts that 'I caused my husband to behave badly' and 'I ruined my children's lives by getting a divorce', can be traced to the underlying assumption 'It

is my fault when bad things happen to me' (Beck et al., 1979, p.250). Once identified, such assumptions must be evaluated. To achieve this, Beck recommended that the therapist collaborate with the client to devise a simple test of the assumption; where necessary, this may take the form of a series of graded exercises. For example, one of Beck's clients held the assumptions that 'If you want people to like you, you should always be nice to them', and 'If you find fault, they will punish you'. One of the client's presenting clinical problems was a lack of assertiveness towards his wife, so the first of a series of tests was to confront his wife on a minor issue (ibid., p.256).

Attribution Theory and Learned Helplessness Theory.

Another way self-statements have been talked about in terms of guiding behaviour has been in terms of causal attributions. Attribution is 'a process whereby the individual "explains" his world' (Nisbett & Valins, 1972). In essence attribution theory proposes that people form (often unreliable) explanations or causal attributions about the things which happen to them, and that these attributions influence their subsequent behaviour. Attribution therapy aims to replace existing maladaptive attributions with more 'rational' and adaptive ones. Nisbett and Valins report a case of attribution therapy with a young man who feared that he might be homosexual. The attribution about homosexuality was formed in response to three behaviours; he found sex unsatisfactory, frequently observed himself looking at other men's crotches, and believed that his penis was abnormally small. Neale (the therapist) implemented some simple steps to provide a normal explanation for these behaviours. The essential feature of Neale's argument was that lack of sexual satisfaction and looking at other men's crotches were understandable reactions to concern about inadequacy. Neale dispelled the client's worry that his penis was abnormally small by pointing out that when viewed from above, objects in the same plane as the line of vision appear shorter.

In his Learned Helplessness Theory (LHT), Seligman proposed that depressed people tended to generalise from specific

instances of failure to a more general sense of helplessness (Seligman, 1975). In this way, depressed people came to expect that outcomes would be out of their control - that is, they developed an expectation of non-contingency between their own behaviour and the environmental outcome. In the reformulated version of LHT (Abramson, Seligman & Teasdale, 1978), it was proposed that this general expectation of non-contingency was based upon specific kinds of causal attribution. Similarly, the presence or absence of depression was 'closely linked' to the type of causal attribution made when confronted with failure (Atherley, 1988). Causal attributions were classified in three dimensions:

(a) Internal - external. The causes of uncontrollable events could either be viewed as due to something about the person (internal) or the situation (external).

(b) Global - specific. The causes of uncontrollable events could be seen as generally applicable (global) or peculiar to the situation (specific).

(c) Stable - unstable. The causes of uncontrollable events could be seen as long-term (stable) or fleeting (unstable).

These dimensions made it possible to classify the different ways in which people responded to non-contingency. Hiroto and Seligman (1975) observed that when faced with an unsolvable task, subjects could attribute failure either to task difficulty (an external cause) or to the task being too difficult for them (an internal cause). If an internal attribution was made, whether it was then generalised and maintained would further depend on if the failure was attributed to global and stable factors. It should be noted that the internal-external dimension has poor reliability, and in a further reformulation (Abramson et al., 1986) greater emphasis was placed on the remaining two dimensions.

Whilst the three attributional dimensions classified the different ways people might respond to non-contingency, they did not explain why one individual reacted negatively whereas another did not. That is, the account was merely descriptive. To

account for individual differences, the notion of a predisposing attributional style was invoked. Attributional style is a similar concept to Beck's predisposing schemas. The contention was that certain individuals developed a tendency to attribute failure to permanent and pervasive aspects of their character, which made them vulnerable to depression. However, the existence of a predisposing attributional style remains unproven (Atherley, 1988). Indeed, the very notion of a cognitive style, let alone an attributional one, has been contested (Lazarus, 1976). However, the question of whether the attributional model is useful clinically does not depend upon the existence of a predisposing attributional bias. What is unfortunate is that the majority of research in the field has focused on this issue, and the question of whether attributions are important in the maintenance of depression has been neglected (Alloy et al., 1988). What LHT does offer, is a useful clinical tool for describing both the client's presenting problem, and the desired clinical goal. For instance, one might wish to change the internal stable attribution 'I failed because I am stupid' to the internal variable one 'It's not that I am stupid, I just didn't try hard enough': alternatively, one might wish to replace the internal stable attribution 'I am a failure with women' with the external variable one 'Those two were not right for me, so I need to increase the sample' (Forsterling, 1980).

Self-Instructional Training.

Another clinical approach to emphasise the importance of covert behaviour was self-instructional training (SIT). One of the forerunners in the field was Meichenbaum. Well aware of the work of Vygotsky, Meichenbaum was keen to exploit the enormous potential for self-regulation within the clinical setting. Meichenbaum postulated that many clinical problems stemmed from a failure to regulate behaviour verbally. He therefore sought to mimic the Vygotskyian process of internalisation within therapy. Initially the client's behaviour was guided by overt instructions from the therapist, after which the client would regulate his or her own behaviour first by overt, and subsequently, covert self-instructions. To assist in the process of internalisation Meichenbaum employed some more traditional

behavioural techniques. Thus, Meichenbaum recommended that the therapist model each of the three stages of internalisation, and voice self-reinforcing statements throughout. In his 1973 study, Meichenbaum found that this programme successfully established control over orienting, organising, regulatory and self-rewarding behaviour in schizophrenics.

As in all the therapies discussed so far, Meichenbaum was interested in regulating covert behaviour as a means of altering problematic overt behaviour. Clearly it was critical to demonstrate that changing what people said to themselves did indeed produce a predictable change in overt behaviour. In an early experiment, Meichenbaum altered client's self verbalizations about signs of stress, such that hitherto debilitating sweaty palms and increased heartbeat came to be seen as facilitative, in that they offered the opportunity to employ new coping strategies. Meichenbaum argued that the production of inner speech had 'deautomised' the maladaptive behaviour. Whilst this study confirmed the clinical promise of self-regulation, it is not clear that it confirmed Meichenbaum's assumption that clinical disorders reflected a failure to self-regulate. It is possible that the intervention simply changed the nature of the guiding speech, from maladaptive to adaptive. Support for the contention that at least some clinical disorders reflected a failure to employ verbal regulation was provided by Camp (1977). Camp demonstrated that young aggressive boys failed to employ verbal mediation, and that even when they did so it failed to gain functional control over their behaviour.

In a paradigm study, Bornstein and Quevillon (1976) used self-instructional training to teach hyperactive children to verbalize the nature of specific tasks, and to employ an appropriate problem-solving strategy. Reinforcement was made contingent upon a correspondence between the verbalizations and the behaviour, and the authors were able to report a significant and stable generalisation effect in the classroom. However, generalisation has not commonly been obtained with self-instructional packages. Research by Lowe and Higson (1981) involving people diagnosed as schizophrenic demonstrates the

typical drawbacks encountered. Although self-instructional training did improve performance on the specific problem-solving training tasks, training proved extremely difficult and the effect only generalised to tasks of a clearly similar nature. This is a major problem, because the ultimate aim of self-instructional training is to promote self-control. The specific tasks which are used at the training stage are normally arbitrary problem-solving exercises and of limited interest clinically. The aim of the training is only nominally to improve performance on these tasks; the hope is that these newly acquired self-regulatory skills will be applied in a variety of new (i.e. untrained) situations, some of which will be of considerable interest clinically. In the absence of wide generalisation, the technique remains of limited use.

The problem for self-instructional training seems to be one of finding the right instructions. 'Mechanical' instructions are task specific, and whilst they facilitate greater control on the training tasks, generalization is poor. 'Elaborative' instructions are more general, such as 'what is it that I am supposed to be doing?', but have enjoyed only slightly more generalization (Loper, Hallahan & Lanna, 1982). What is interesting is that spontaneous transfer or generalisation is not actually too common in the general population (Reed et al., 1974). The difficulty seems to be one of spotting problem isomorphs (Newell, 1979) - that is, seeing how a new situation resembles one previously encountered. This explains why generalisation does occur with tasks of an obviously similar nature to the training tasks. Glick and Holyoak (1983) found that any manipulation which stressed the similarity between the training and novel tasks enhanced transfer. Crisafi and Brown (1983) found giving hints sufficient to induce generalization from easy to difficult problem variations. What is noteworthy, is that those interventions which did produce generalisation did not require extensive training.

A Contextualist Approach.

Hayes (1987) put forward a contemporary behavioural approach which addressed the issue of self-regulation. Hayes argued that the 'cognitive revolution' had been a case of the right

problem but the wrong solution. Just because in the past behaviourists had paid scant attention to covert behaviour, this did not necessitate a volte face, but rather placed the onus on them to develop their account more fully. Hayes acknowledged that covert behaviour was important and necessary for a full contingency analysis. However, he stipulated that verbal behaviour could not be said to cause overt behaviour, or vice versa; all ultimate causes of behaviour were environmental. To Hayes, in so far as radical behaviourism applied to contingencies, it applied to contexts; contingencies of reinforcement simply described the relationship between behaviour, covert and overt, and those events which preceded and followed it. A behavioural analysis which included covert behaviour would always distil down to the task of contingency analysis.

Hayes argued that control by covert verbal behaviour (i.e. self-regulation) was like control by overt instructions. Heavily influenced by Skinner's distinction between rule governed and contingency shaped behaviour, Hayes conceptualised the problem of irrational beliefs (Ellis), maladaptive assumptions (Beck) or negative attributions (Seligman), as relating to different kinds of maladaptive rules. Provisionally Hayes demarcated two types of rule following; tracking and plying (Zettle & Hayes, 1982). A track occurs when there is an apparent correspondence between the rule and the contingency. Pliance refers to those instances when the rule appears to be under the control of socially mediated consequences for a correspondence between the rule and the behaviour. Hayes further distinguished conditional rules (which were clearly discriminated from the events to which they referred) and literal rules (which were not). The question of why people followed maladaptive rules then becomes one of under which conditions do rules produce an insensitivity to the environmental contingencies (Hayes, 1987). However, this may be an oversimplification. It is possible that the majority of rules produce this insensitivity (cf. Lowe's work cited earlier), and that only some of them are maladaptive. Alternatively, some maladaptive rules may be accurate reflections of the contingencies.

Although Hayes was at odds with cognitive therapists theoretically, therapeutically he too was concerned with verbal control. To a contextualist, it is very often not the events themselves which are problematic, but the social-verbal context within which they occurred. That is, feeling anxious, for example, is less of a problem than believing that one should not feel anxious and should avoid anxiety at all cost. To use Hayes' analogy, this is akin to trying to dig one's way out of a hole with a spade! Thus, Hayes was more concerned to change the way the client felt about being anxious than to prevent him from being anxious. In a slightly different way Kelly made the similar point that it is not for the therapist to tell the client how he or she should feel. Hayes argued that the way to change covert behaviour, indeed all types of behaviour, was to change the context within which it occurred. Therapeutically, because the client's maladaptive rules were supported by a particular context (i.e. set of contingencies) Hayes sought to alter the context within which the client behaved. Like Kelly, Ellis and Beck, Hayes recommended deautomatizing verbal control by giving the client insight into the ways in which verbalizations or rules influenced behaviour. In the same way that Beck urged his clients to view beliefs as hypotheses, Hayes urged his clients to formulate rules without necessarily following them. Hayes argued that too often rules were seen as being 'literal'. For example, when one says 'This is a good cup', this is not generally interpreted as describing our reaction to the cup, so much as the cup itself. So too when one says 'I am bad' (Hayes, 1987). One way Hayes employed of weakening the literality of rules was to instruct clients to add the rider 'I am having the thought that...' to statements such as 'this cup is good' and 'I am bad'. Again the similarities with the other clinical approaches discussed are manifest. Hayes' goal was to awaken the client to the reality of the regulatory power of language, to deautomatize the regulatory strength of particular maladaptive rules, and to impart greater self-control.

1.4 A Critique and Synthesis.

What is particularly striking about the various clinical approaches discussed is the enormous degree of overlap in terms

of the importance placed on self-regulation, and the ways proposed for changing it. What is also striking are the apparent developmental differences underpinning these different approaches.

What most cognitive and cognitive behavioural theories have in common, is the tenet that the cognitive and affective systems are not independent. Cognition is assumed to determine affect; a successful intervention is presumed to change the maladaptive cognition, which results in an improved affective state. Yet there have long been doubts as to whether cognitive theory provides a satisfactory theoretical underpinning for cognitive therapy (e.g. Bebbington, 1985; Gilbert, 1984). Certainly, there appear to be major problems with cognitive and cognitive behavioural theories of depression.

Not the least of these difficulties is the need to define satisfactorily the terms cognitive and affective. For instance, does 'cognitive' refer exclusively to conscious activity, or does it include preconscious activity (Bradley & Power, 1988)? Problems of definition apart, there is a question mark over the postulated sequence of cognitive change leading to affective change. First, in order to demonstrate that cognitions are indeed changed by an intervention, they must be measured before and after it is introduced. But this is not common practice (*ibid.*); typically, only behavioural measures and symptom measures (such as the Beck Depression Inventory) are administered (McLean & Hakstian, 1979). The link between the theory and the practice is weakened further by the lack of a component analysis of the various interventions employed. Cognitive and behavioural techniques are often combined, so that it remains difficult to attribute a change in cognition, or indeed affect, to a particular technique, such as the challenging of maladaptive assumptions. Furthermore, cognitive change has been reported in studies which employed a psychopharmacological intervention only (e.g. Simons, Garfield & Murphy, 1984).

Another point of theoretical debate concerns the onset or aetiology of depression. Those theories reviewed which adopt the

model of affect as being determined by cognition each posit predisposing maladaptive attitudes as underlying depression. Beck, for example, has argued that 'early experiences provide the basis for forming negative concepts about one's self, the future, and the external world' (Beck et al., 1979, p.16). Whether clinical depression was manifested then depends on life experiences. Similar vulnerability models have been forwarded to account for the emergence of schizophrenia (cf. Meehl, 1962, discussed in Chapter II). Ideally a large longitudinal study would be conducted with the emergence of clearly defined negative rules being monitored during childhood. This would enable predictions to be made regarding the likelihood of the emergence of clinical depression, subject to certain kinds of triggering life experiences. Unfortunately, such a study is prohibitively expensive. Brewin (1985) reviewing the existing evidence for the revised learned helplessness model of depression concluded that the theory had not been adequately tested, but that what evidence there was did not support the proposed developmental account. Willner (1984) drew a similar conclusion; he reported finding little empirical support for the hypotheses of learned helplessness and Beck's theory of depression, that depression arose out of a set of predisposing attitudes. Moreover, if there were pervasive 'cognitive styles' underlying depression, one would expect them to be in evidence even when the individual was not experiencing an episode of depression. Yet differences have not been found between recovered depressives and non-psychiatric controls (Wilkinson & Blackburn, 1981).

Clearly the role of verbal behaviour in the aetiology of depression remains unclear. However, even if they were found to play no causal role in the emergence of depression, negative verbalisations about oneself and one's dealings with others could still be important in the maintenance of depression (Bebbington, 1985). Yet negative verbalisations have not always been observed in clinically depressed individuals (Coyne & Gotlib, 1983). Also, Hargreaves (1985) found no support for the hypothesis that depressed individuals make significantly different attributions about the causes of events than non-depressed people. Brewin (1985) argued that depressive or negative attributions may

simply be symptoms of depression, and of no causal significance in either the onset or maintenance of the condition. Simons et al. (1984) offered the halfway position that a change in the client's covert verbal behaviour may be an important part of overall clinical improvement, rather than being the major cause of that improvement. This would certainly account for the change in verbal behaviour observed in psychopharmacological studies, and for the finding that combinations of therapies are sometimes more effective than cognitive therapy alone (Williams, 1984).

A final bone of contention for cognitive theories of depression, and one which has received surprisingly little attention, is the extent to which depressive cognition accurately reflects reality. Many of the theorists discussed assumed that the depressive's negative cognitions were misattributions - that is, that they were irrational. And yet, as Smail (1984) observed, it may well be that for some people the world is a genuinely painful and depressing place. Certainly the possibility that depressed individuals perceive their life situations accurately cannot be rejected. Research investigating estimation accuracy when judging relationships between behaviour and environmental consequences has suggested that depressed people are more likely to perceive situations accurately. If there is any irrationality, it appears to be on the part of non-depressed individuals, who have a tendency to view the world through rose tinted glasses (e.g. Alloy & Abramson, 1979; 1982). Furthermore, Layne (1983) observed that high scores on an irrational beliefs test may reflect pessimism rather than irrationality.

Unlike the cognitive and cognitive behavioural theorists, behaviourists such as Hayes (1987) do not accept the postulate that cognition determines affect. Rather, cognition is viewed as behaviour which cannot be seen (i.e. covert behaviour), but is nevertheless controlled by the same laws as overt behaviour. Hence, Hayes stated that all ultimate causes of behaviour were environmental, as one behaviour cannot be said to be the cause of another behaviour. Thus, although covert behaviour is viewed as an important and necessary part of a functional account of clinical disorders, self-verbalizations could not be said to be the cause of

disordered affect. Yet as Mahoney (1974) observed, talk of ultimate causes of any kind is of dubious worth, since it is not clear where complex interactional causal chains actually start and finish. Moreover, to state that all A's (ultimate causes of behaviour) are B's (environmental), is to ignore Wittgenstein's polar principle. This requires there to be some A's which are not B's if the statement 'this A is of type B' is to convey anything (cf. Harzem & Miles, 1978). A second difficulty with Hayes' position concerns his contention that all maladaptive rules or assumptions do not reflect the contingencies. Although it is possible that this is the case, there is no a priori reason why a rule which is maladaptive could not also be an accurate reflection of the contingencies. (This issue is an empirical one).

Each of the theories discussed involves its own 'language game', and what aetiological claims are made remain speculative. What is striking is the similar way in which each of the theorists identified the client's verbal behaviour (covert and overt) as an important variable in determining his or her subsequent behaviour. Great store is placed on the client's verbal descriptions of himself or herself and his or her interactions with others. Whether these descriptions are called constructs, irrational thoughts, maladaptive assumptions, rules, or attributions, they are viewed as important. What is also striking is the similar way each theorist, with the possible exception of Meichenbaum, recommended for changing a client's verbal behaviour. (Meichenbaum's self-instructional training is slightly different from the other therapies discussed in that his starting point was that the client was not employing verbal mediation). The initial clinical goal is to give the client insight into the way verbalisations influence behaviour -that is, to make the client aware of the regulatory function of language. One way of doing this is to employ Beck's strategy of waiting for a sudden mood change, and asking the client what he or she had been thinking immediately prior to it. The second goal is to help the client to exercise better control of this verbal regulation. That is, to assist clients to monitor and evaluate critically the descriptions they formulate about themselves and their dealings with others. First, this entails deautomising the verbal control of particular beliefs the clients

hold about themselves and their dealings with others. Assumptions about oneself and one's world must be seen to be fallible. To achieve this, Hayes recommended adding the rider 'I am having the thought that...' to assumptions such as 'I am a bad person', as a way of demonstrating that rules are hypotheses which may or may not be accurate. Second, clients must become aware that they can gain better control over the regulatory function of language, and in so doing can free themselves from a particular self-image. Kelly recommended asking the client to generate and consider other construals of himself or herself, in order to see that people are self-inventing. Having deautomised the verbal control of particular rules, the client is then in a position to monitor and test his or her future verbal behaviour.

What is interesting about Meichenbaum's self-instructional training is that in assuming that clinical disorders reflect a failure to employ verbal mediation, the onus was placed on the therapist to supply the instructions. Unlike the other therapeutic approaches, the task was not to deautomise ongoing verbal control, but to initiate it. This explains why self-instructional training does not attempt explicitly to give the client insight into the way self-regulation works. This may also explain why self-instructional training has been plagued by a lack of generalisation. Researchers who have suggested that a metacognitive element needs to be added to self-instructional training in order to promote transfer (e.g. Lowe & Higson, 1981) may have in mind just the kind of insight into self-regulation that the other theories, discussed seek to impart.

What the above analysis reveals is that a number of seemingly diverse approaches to clinical disorders in fact share a common purpose - to enable the client to regulate effectively his or her behaviour. Moreover, this goal is pursued in a similar fashion by each approach. This common therapeutic process is consistent with the Vygotskyian concepts of internalisation and the zone of proximal development. At the onset of therapy the client functions at a certain level of development; he or she has limited understanding of and control over the self-regulatory function. In keeping with the concept of internalization, the

therapist helps the client to do with assistance what he or she could not do alone; namely, to monitor self descriptions and descriptions of his or her interactions with others. Being initiated by the therapist (i.e. the verbal community) the acquisition of this new skill is of social origin. As such, the therapeutic process can be seen to explore the client's zone of proximal development - that is, it explores the difference between what the client can achieve without assistance and with assistance. Whether the client can display mature regulation with the assistance of the therapist will depend to a large degree on the success of the therapist in negotiating a common understanding from which to go forward. In all situations where a teacher or clinician assists in the exploration of an individual's zone of proximal development, the process can only take place if the teacher or clinician can establish such a platform successfully (Wertsch, 1984). In therapy, because the client and therapist might have different perspectives on the nature of the problem, if necessary the therapist must suspend temporarily his or her opinion on how the problem is best understood in order to negotiate a starting point. The only lasting redefinition that takes place occurs subsequently on the part of the client. If the client's zone of proximal development was sufficiently broad and an adequate common understanding was negotiated, it would be possible for the client to acquire improved control of the regulatory function of language. Whether this newly acquired higher psychological function was maintained and generalised to situations outside the therapeutic situation would depend on whether it underwent internalisation. If internalisation occurred, the client would then be able to regulate effectively his or her own behaviour, without assistance.

The above analysis offers a way of conceptualising the acquisition of effective self-regulatory skills within the clinical setting. It should be emphasised that although Vygotsky's account is developmental, it is also dynamic and concerns processes which develop throughout life. Thus, it is not assumed that individuals in need of assistance to exercise mature self-control are in any way developmentally retarded. Nor is it assumed that the non-clinical population would not also benefit from such assistance. This point is well worth making, because a number of the theories discussed

display a 'rationalistic bias'. It is a common assumption that people suffering from disorders such as depression do so, at least in part, because they hold beliefs which are in some sense irrational. Presumably, the implicit standard of comparison is the rational beliefs formed by the non-clinical population. Yet is it the case that the non-clinical population typically forms beliefs which reflect reality accurately and monitors and discards those beliefs which do not?

1.5 Is it normal to be rational?

Every day the social perceiver makes numerous, apparently complex social judgements, such as predicting another person's behaviour and attributing causality. Until recently, although it has long been known that perceivers 'go beyond the information given' (Bruner, 1957), research on this topic was marked by a 'rationalistic bias' - that is, the assumption that judgements are made using thorough, optimal strategies (Taylor et al., 1983). Errors in judgement were attributed either to accidental error, or to the irrational motives and needs of the perceiver. Within social psychology this perspective is represented by research on causal attribution. In its broadest sense, attribution theory is concerned with the attempts of ordinary people to understand the causes and implications of the events they witness (Ross & Anderson, 1983). Over the past decade or so, a body of evidence has accumulated to suggest not only that people's judgements and decisions are less complete than had been assumed, but also that not all errors can be traced to motivational factors.

When discussing judgements or beliefs, it is important to distinguish formation from maintenance. In the first instance, the belief must be arrived at by some means; the individual must formulate (or acquire) a hypothesis on the basis of his or her experience. Ideally, the individual should then actively seek both confirmation and disconfirmation of his or her belief. Finally, in the light of this endeavour, the individual should either continue to hold the belief (when the belief is confirmed), modify the belief (when some aspect or aspects of it are found to be wanting), or reject the belief outright (when it is found to bear no relation to

experience).

(i) **Belief formation.**

Much is now known about the sources of non-motivational bias in social judgement and inference. The fundamental attribution bias, for example, is the tendency for attributers to under-estimate the impact of situational factors and to over-estimate the role of dispositional factors in controlling behaviour (Heider, 1958). Bierbrauer (1973) studied subjects' impressions of the forces operating in the classic Milgram (1963) setting, and found a consistent bias towards assuming that the subject's obedience reflected his or her distinguishing personal dispositions, rather than the potency of the situational constraints and pressures.

In fact the fundamental attributional bias may be an example of the more pervasive 'availability' bias (Tversky & Kahneman, 1973). 'A person is said to employ the availability heuristic whenever he estimates frequency or probability by the ease with which instances or associations come to mind' (ibid., p.208). It appears that whenever some aspect of the environment is made more salient to the perceiver it is given more weight in causal attribution. One consequence of this bias is that people tend to overlook the importance of less salient non-occurrences when forming inferences or beliefs (Ross, 1977). For instance, Chapman (1967) described a bias in judging the frequency with which two events occurred. Naive subjects were presented with information concerning hypothetical psychiatric patients. In each case these data consisted of a clinical diagnosis together with a drawing of a person made by the patient. Later the judges had to estimate the frequency with which each diagnosis (such as paranoia) had been accompanied by various features of the drawing (such as peculiar eyes). The subjects were found to over-estimate markedly the frequency of the co-occurrence of natural associates, like suspiciousness and peculiar eyes. Chapman called this tendency 'illusory correlation'. The illusory correlation effect proved extremely resistant, occurring even when the correlation between symptom and diagnosis was actually negative and serving to

obscure relationships which were present.

The false consensus, or egocentric attribution bias, dictates that people often pay no attention to consensus information when making causal attributions either about themselves or about others. For example, McArthur (1972) gave subjects a number of one line descriptions such as 'While dancing, Ralph trips over Joan's feet'. Additionally subjects were told that Ralph trips over almost all girl's feet (or over almost no other girl's feet), that Ralph almost always (or almost never) trips over Joan's feet, and that almost everyone else (or almost no one else) trips over Joan's feet. Subjects were then asked whether the tripping incident was Ralph's fault, Joan's fault, or just the fault of circumstances. A detailed analysis revealed that consensus information accounted for only 3% of the variance in any of the three sorts of inference; whilst subjects seemed to think it important whether Ralph trips over other girl's feet and whether he usually tripped over Joan's feet, it was of no concern to them whether other people trip over Joan's feet.

There is also evidence that subjects do not take proper account of the reliability of information when making causal attributions. It is a common observation that psychologists who conduct job interviews often experience considerable confidence in their predictions, even though they know of the vast literature showing that selection interviews are highly fallible. Social judgement is frequently based on inaccurate recall of other's behaviour. Yet research by Trope (1978) demonstrated that subjects tended to rely almost exclusively on unreliable memories when making certain inferences, even when they were aware of the unreliability of those memories. Moreover, subjects have been found to express high levels of certainty in their inferences and judgements, even when the unreliability of the source was stressed (Tversky & Kahneman, 1983).

There are other forms of bias in the process of forming a causal attribution of inference, but the two most important points are clear. First, for a variety of different reasons, the process of forming an inference does not conform to the dictates of a

probabilistic and optimal model, but rather is based on certain heuristic models which are prone to be inaccurate. Secondly, people do not appear to be aware of a number of these biases.

(ii) Seeking disconfirmation.

Popper (1977) observed that the formation of a theory or conjecture always included a 'dogmatic' phase, and often included a 'critical' one. A dogma may be thought of as an initial hypothesis or causal attribution; the critical phase is when the dogma is given up in the light of disconfirmation. As we have seen, the formation of a dogma is open to bias and error. Erroneous judgements therefore need to be identified and rejected at the critical phase - that is, they need to be falsified. Thus, the attributer should actively seek to disconfirm his or her judgements. However, it appears that far from pursuing disconfirmation, people tend to seek only to confirm their judgements - that is, they exhibit a confirmation bias.

The confirmation bias is illustrated well by the work of Wason (1960) on the elimination of hypotheses. Wason told his subjects that the sequence of numbers 2,4,6 conformed to a simple rule. Their task was to discover this rule by generating successive number series of their own. After each series, subjects were told whether their numbers conformed to the rule, which was 'numbers in increasing order of magnitude'. Unlike traditional concept formation experiments, the aim of the task was not to see if the subjects discovered the rule, but how they reacted to their hypotheses being corroborated. Suppose a subject believed the rule to be ascending numbers separated by an interval of two. Typically Wason's subjects 'tested' such hypotheses by offering sequences which conformed to their rule, such as 10,12,14 and 20,22,24. What the subjects should have done was to offer a sequence which did not conform to their rule. A subject who was told that the sequence 3,6,9, did conform to the rule would have rejected decisively the hypothesis of ascending numbers separated by an interval of two. The correct rule could not in fact be proved, but any incorrect rule could be disproved. Wason reported that the subjects 'appeared to display rigid or fixated

patterns of behaviour because they failed to overcome the set created by their confirming evidence'.

The confirmation bias has been demonstrated in a variety of logical reasoning tasks (see Wason & Johnson-Laird, 1972) as well as in more realistic settings (Mynatt, Doherty & Tweney, 1977). What is worrying about the confirmation bias is that in a rich and complex social environment it is often possible to find some supporting evidence for almost any belief. As Popper stated, it 'is easy to obtain confirmations or verifications for nearly every theory - if we look for confirmation.' (as quoted in Wason, 1977). Self-fulfilling prophecies amplify this point well. Jussim (1986) identified three sequential stages to self-fulfilling prophecies within the classroom. Initially, teachers develop expectations (dogmas) about students. This leads them to act differently towards the students, depending on their expectations, as a consequence of which students react in expectancy-confirming ways.

(ii) Rejection of disconfirmed hypotheses.

The last part of Popper's critical stage is when a belief which has been falsified is rejected. Popper (1977) reported being 'shocked by the fact that Marxists (whose central claim was that they were social scientists) and the psychoanalysts of all schools were able to interpret any event as a verification of their theories'. This led Popper to argue that only attempted refutations which did not succeed should count as verifications. Popper reported that only subsequently did he arrive at the realization that all theories could become 'immunized' against criticism. However, it is not only complex social or psychological theories which are resilient to empirical challenge; it appears that all beliefs, from personal impressions through to broader social theories, are extremely resistant to falsification.

Lord et al. (1979) selected two groups of subjects on the basis of whether they supported or opposed capital punishment as a useful deterrent. Each group was then presented with two hypothetical studies, one of which reported evidence to support the belief that capital punishment was an effective deterrent, and

one reporting evidence to the contrary. Subjects had to make ongoing ratings of their conviction in their particular belief, and to assess the worth of the two studies. The first finding was that proponents and opponents alike rated the study that supported their beliefs as consistently 'more convincing' and 'better conducted' than the study that opposed their viewpoint. In fact the formal nature of the evidence reported in both studies was identical. Secondly, the effect of reading both studies was to polarize further the beliefs of both proponents and opponents.

As well as having to incorporate new data, beliefs can also be challenged by having the original evidence discredited. One way of assessing this experimentally is to employ a debriefing paradigm. Jennings, Lepper and Ross (1980) found that subjects' impressions of their ability to persuade a confederate to donate blood could persist even after learning that the initial outcome was totally inauthentic. That is, even though the knowledge that the behaviour of the confederate had not been contingent upon their own power of persuasion, the impression formed during the experiment persisted. Similar findings have been reported for distinguishing genuine from bogus suicide notes (Ross et al., 1975) and assessing one's own logical problem-solving ability (Lepper, Ross & Lau, 1980). Perseverance of this kind has also been demonstrated experimentally with broader beliefs about the world. Anderson, Lepper and Ross (1980) manipulated subject's beliefs about the relationship between firemen's professional performance and prior scores on a pencil and paper test. In one variation, they presented only two cases; one successful and one unsuccessful fireman, with appropriately discrepant test scores. Subjects were asked to account for this relation. The theories formed to account for the relationship survived the revelation that the two cases had been totally fictitious. Interestingly, another attributional bias was at work in that inadequate sample size did not deter them from this task.

This literature on the formation and maintenance of beliefs within the normal population is consistent with the research on verbal self-regulation discussed at the start of this chapter. The beliefs and judgements formed by the normal population are not

always accurate reflections of reality; the process of belief formation is plagued by bias and error. Once formed, beliefs direct subsequent behaviour; they can be self-fulfilling and extremely resistant to change. Disconfirmation is generally not sought, whilst ambiguous information which supports the belief tends to be accepted and ambiguous falsifying data tends to be dismissed. Even when faced with disconfirmation which seems logically devastating, beliefs can persist unaltered. To hold an inaccurate and fixed belief does not, therefore, appear to be the prerogative of the clinical population. This begs the question of where exactly the distinction lies between, for example, the negative beliefs of people suffering from depression or the delusional beliefs of people diagnosed as schizophrenic, and the beliefs of the non-clinical population. This point will be dealt with in greater detail in Chapter III, which focuses on delusional beliefs, but before then Chapter II introduces the topic of schizophrenia and details the rationale for the single symptom approach to studying psychosis employed in the present research.

CHAPTER II. SCHIZOPHRENIA

Introduction

Chapter II begins with an introduction to the role of classification within psychiatry. There follows an introduction to the diagnosis and classification of 'schizophrenia'. Some of the difficulties to have plagued attempts at understanding more about the concept of schizophrenia are then discussed. Whilst far-reaching advances in the diagnosis of schizophrenia have been made, there remain major problems with the concept's validity. For example, the precise aetiology of schizophrenia is still unknown and the clinical prognosis is highly variable. Uncertainties such as these have led clinicians to adopt a number of diverse approaches to the the study of 'schizophrenia'. One such approach has been to study particular symptoms of 'schizophrenia', rather than the syndrome itself. The chapter concludes by detailing some of the single symptom work conducted on hallucinators.

2.1 Psychiatric classification.

The term classification may be used to refer to the system of classes into which objects or data are sorted, and also to the process of allocation itself. In an ideal world, each object would belong to one class and to one class only, and all objects would be classified; such classes would be what Hempel (1961, in Neale & Oltmanns, 1980) termed monothetic. However, ours is not an ideal world, and many classes are polythetic, that is, the members of the class share different attributes, and there is no one common defining attribute; furthermore, some of these attributes may appear in other classes.

Several systems of classification are used in psychiatry, nearly all of which share similar underlying principles. Typically, the first step is to separate mental retardation and personality disorder from mental illness, on the grounds that mental retardation is present continuously from early life, and personality disorders from the end of adolescence, whereas mental illness has a recognizable onset after a period of normal functioning in adult life (Gelder, Gath & Mayou, 1983). Usually, the mental illnesses are then subdivided into psychoses (functional and organic) and neuroses, along the following lines:

Table 2.1. *The basic classification.*

Personality disorder
Mental retardation
Organic psychoses
Functional psychoses (schizophrenia; affective psychoses)
Neuroses
Adjustment disorder
Other disorders
Disorders specific to childhood

(From Gelder et al. 1983, p.70)

Psychoses, however, are notoriously difficult to define, rendering a clear demarcation from the neuroses difficult; indeed, in The Oxford Textbook of Psychiatry (Gelder et al., 1983), an alternative classification system is employed. This is shown in Table 2.2.

Table 2.2. *Alternative Classification of Mental Disorders*

Organic disorders

Acute organic syndrome

Dementia (chronic organic syndrome)

Amnesic syndrome

Schizophrenia

Schizoaffective disorders and related syndromes

Paranoid states

Affective disorders

Depressive disorder

Mania

The neuroses

Non-specific

Anxiety neurosis

Phobic neurosis

Obsessional neurosis

Hysteria

Depersonalisation syndrome

Personality disorders

Adjustment disorders

Other disorders

Sexual dysfunction and sexual deviations

Alcohol and drug dependence

Miscellaneous syndromes

Psychological factors associated with medical conditions

Mental retardation

Disorders specific to childhood

Within psychiatry there are many possible techniques for classifying abnormal mental states, the most familiar of which is clinical diagnosis. Diagnosis is concerned with the identification of classes or syndromes - that is, clusters of symptoms or traits which frequently occur together at one point in time, or which follow a characteristic sequence over a number of months or years (Wing, Cooper and Sartorius, 1974).

2.2 Classification and diagnosis of schizophrenia.

Before reviewing the symptomatology of 'schizophrenia', it is necessary to distinguish between acute and chronic schizophrenia. Essentially, in acute schizophrenia, the predominant clinical features are the so-called 'positive' symptoms (such as hallucinations, delusions, and interference with thinking), while chronic schizophrenia is characterised by the 'negative' symptoms (like apathy, social withdrawal, and lack of drive). The major symptoms of 'schizophrenia', as described in The Oxford Textbook of Psychiatry (Gelder et al., 1983), are as follows:-

The Acute Syndrome.

Appearance and behaviour: some patients with acute schizophrenia seem entirely normal, whereas others seem awkward in their social behaviour, and in some way odd. Some patients smile or laugh without obvious reason, some are restless and noisy, or show sudden changes of behaviour, or a marked withdrawal from company.

Speech often reflects an underlying thought disorder. In the early stages, there is vagueness in the patient's talk that makes it difficult to grasp the meaning. Some patients have difficulty in dealing with abstract ideas (i.e. they show 'concrete thinking'). Others become preoccupied with vague pseudoscientific or mystical ideas.

When the disturbance is more severe two characteristic kinds of abnormality may occur. Disorders of stream of thought, include pressure of thought (when ideas arise in unusual variety and abundance and pass through the mind very rapidly), poverty of thought (when the patient has only a few thoughts, lacking in colour) and thought blocking (a sudden interruption in the flow of conversation). Thought withdrawal (the conviction that one's thoughts have been taken away) is sometimes classified as a disorder of the stream of thought, but is more usefully considered as a form of delusion.

Loosening of association denotes a lack of connection between ideas. In the severest form, the structure and coherence of thought are lost.

Abnormalities of mood are common and mainly fall into three types. First, there may be sustained abnormalities of mood such as anxiety, depression, irritability or euphoria. Second, there may be blunting of affect (sometimes called flattening of affect), a sustained emotional indifference or diminution of emotional response. Third, there is incongruity of affect, where the mood, though not necessarily diminished, is not in keeping with the context (e.g. laughing when informed of a bereavement).

Auditory hallucinations are amongst the most frequent symptoms. They may be noises, music, single words, brief phrases or whole conversations, and may be unobtrusive or the cause of great distress. Some voices seem to the patient to give commands. Some patients hear their own thoughts spoken out loud either as they think them (Gedankenlautwerden) or immediately afterwards (echo de la pensees). Some voices are in the third person. Some comment on the patient's actions.

Visual hallucinations are less frequent and usually accompany other kinds of hallucination. Tactile, olfactory, gustatory and somatic hallucinations are sometimes reported, and are often interpreted in a delusional way.

Delusions are characteristic. Primary delusions (a delusion which appears suddenly in the absence of any rational or logical reason) are rare and difficult to identify with certainty. Persecutory delusions are common, but not specific to schizophrenia. Less common but of greater diagnostic value are delusions of reference and of control, and delusions of possession of thought (see Chapter III for definitions).

Insight is usually impaired. Most patients do not accept that their experiences result from illness.

Patients diagnosed as schizophrenic do not necessarily experience all these symptoms and the clinical picture is variable. This is discussed in more detail below, but for the present Table 2.3 offers a useful indication of the prevalence of the various symptoms in the acute form of schizophrenia.

Table 2.3. *The most frequent symptoms of acute schizophrenia (World Health Organisation, 1973)*

Symptom	Frequency (%)
Lack of insight	97
Auditory hallucinations	74
Ideas of reference	70
Suspiciousness	66
Flatness of affect	66
Voices speaking to the patient	65
Delusional mood	64
Delusions of persecution	64
Thought alienation	52
Thoughts spoken aloud	50

The Chronic Syndrome.

The most striking feature is diminished volition, that is, a lack of drive and initiative. Left to themselves, the patient may be inactive for long periods, or engage in aimless and repeated activity. Social behaviour may deteriorate, with the patient becoming 'dirty', and engaging in activities such as shouting obscenities in public places.

A variety of motor disorders occurs, but most are uncommon. Such disorders are often called catatonic, and include stereotypy, a repeated movement that does not appear to be goal directed, and a mannerism, which though goal directed appears odd and out of context.

Speech is often abnormal, showing evidence of thought disorder of the kinds found in the acute syndrome. Affect is generally blunted. Hallucinations are common in chronic schizophrenia.

Delusions are often systematised. In chronic schizophrenia delusions may be held with little emotional response; for example, a patient may be convinced that he is being persecuted, but show neither fear nor anger. Delusions may also be 'encapsulated', leaving the remaining beliefs normal and the working and social life well preserved.

Insight is impaired; the patient does not recognise that his symptoms are due to an illness and is seldom convinced of the need for treatment.

Although groups of symptoms which would now be subsumed by the diagnosis of schizophrenia were described in the mid-19th century by Morel, Hecker and Kahlbaum, Kraepelin (1896) was the first to place these conditions under a single category, *dementia praecox*. Kraepelin originally divided the illness into three subtypes (catatonic, hebephrenic, and paranoid) and later added a fourth (simple). Catatonic schizophrenia is characterised by the presence of motor disorders, and these symptoms will be more prominent than hallucinations, delusions and affective symptoms. With hebephrenia, disorders of abstract thinking and affect predominate. Typically such patients are childish, and delusions are poorly organised and ill held. In paranoid schizophrenia, the clinical picture is dominated by well organised paranoid delusions; other disorders are minimal, and the patient may appear normal until the abnormal beliefs are uncovered. Simple schizophrenia is characterised by the insidious development of odd behaviour, social withdrawal and declining work performance. With the possible exception of the paranoid type, the subgroups are of doubtful validity because they cannot be distinguished clearly in clinical practice (Gelder et al., 1983). Moreover, no support was found for the four subtypes of schizophrenia in the International Pilot Study of Schizophrenia (W.H.O., 1973).

Subsequently E. Bleuler (1911) renamed the condition (previously known as '*dementia praecox*') schizophrenia. He did this in order to emphasise what he regarded as its most important characteristic, that is, the disintegration of the personality resulting from the loosening of associations (Bentall et al., 1988). Bleuler was concerned far less with prognosis than with the mechanisms of symptom formation, and he adopted a less precise approach to diagnosis than Kraepelin (Gelder et al., 1983). In an attempt to make the diagnosis more reliable, Schneider (1959) identified a group of symptoms characteristic of schizophrenia, but rarely found in other disorders. These 'first rank symptoms' were not presumed to have any central psychopathological role. It is important to note that Schneider

did not view his first rank symptoms as necessary for the diagnosis of schizophrenia. It was rather that the presence of first rank symptoms rendered the diagnosis of schizophrenia more reliable.

'Schizophrenia' has become so pervasive that current estimates of its incidence suggest that between 0.5-1 per cent of people in developed countries will be diagnosed at some point in their lives (Torrey, 1987). Because of the enormity of the problem, a great amount of research has been directed towards finding the underlying cause (or causes) of schizophrenic breakdowns (Sarbin & Mancuso, 1980). However, whilst a multitude of variables has been implicated as causal agents, ranging from season of birth (Watson, Kacula, Anguluski & Bruun, 1982), and life events (Brown & Birley, 1968), to genetic endowment (Gottesman & Shields, 1982), the nature of the condition is still not known precisely. This has given rise to a great deal of dissatisfaction with the scientific value of the concept of schizophrenia.

2.3. Criticism of the concept of schizophrenia.

Criticism of the concept of schizophrenia is nothing new. In the 1960's psychiatrists like Szasz (1961) and Laing (1967), the champions of the anti-psychiatry movement, cast doubt upon the validity of schizophrenia as a disease entity; Szasz because there was no identifiable biological substrate, and Laing because he viewed schizophrenic symptoms as either a reaction to family persecution or a form of psychedelic healing. It should be noted that Szasz has since disclaimed allegiance to the movement (Szasz, 1977). The anti-psychiatry movement attracted a good deal of public attention and sparked off a hot debate as to what terms like illness and disease actually meant. Farrell (1979), for example, criticised the assumption made by both Szasz and Laing, that the term illness was parasitic upon there being some specifiable bodily state which could be called abnormal. Farrell observed that the concept of illness actually played a much wider role in medicine; often, as was the case with migraine, the term illness was employed even

though next to nothing was known of the bodily conditions involved. Furthermore, to use Farrell's example, were the pathological causality of Parkinsonism to be disproved tomorrow, one would no longer be able to classify it as an illness at all according to the definitions of both Szasz and Laing.

In spite of the anti-psychiatry movement, psychiatric practice continued much as before (Bentall, 1980). Typically, psychiatrists argued Farrell's point that whilst the specific aetiology of schizophrenia was not known, this was also true of many medical concepts. Moreover, supporters of the concept of schizophrenia argued that there was sufficient indirect evidence of an aetiological link to suggest that the concept was still useful. This indirect evidence included the development of familiar patterns of chronic impairment, and a tendency for the disorder to be more common in relatives even where this was not obviously explicable in environmental terms (e.g. Wing, Cooper & Sartorius, 1974). However, in order to assess the true worth of the concept of schizophrenia (indeed of any hypothesised construct), the concept must be shown to be both reliable and valid, and it is precisely this which recent criticism has called into question.

If the diagnosis of schizophrenia is to be reliable, it must be shown to be a clinically recognisable syndrome which all psychiatrists can agree upon and label in the same way (Wing, Cooper & Sartorius, 1974). Historically reliability has always been poor, largely because no single system of classification has been agreed upon. For E. Bleuler (1911) thought disorder was the essential feature of schizophrenia; delusions and hallucinations were considered to be of only secondary importance. For Schneider (1959), however, it was the delusions and hallucinations which were of primary importance to the diagnosis; thought disorder was not even a prerequisite for diagnosis. There have been similar disagreements as to the precise symptomatology of schizophrenia between clinicians from the same school of thought (Koehler, 1979). The upshot of this was that whether an individual was diagnosed as

schizophrenic depended not only on his or her presenting symptomatology but on the clinician's particular diagnostic allegiance. Another problem with the diagnosis of schizophrenia is that the concept is disjunctive (Bannister, 1968). That is, the diagnosis of schizophrenia is dependent on the presence of some but not all of the defining attributes, and there is no common defining attribute. In other words, schizophrenia is an example of what Hempel (1961) polythetic classes. Thus, two people may receive the diagnosis of schizophrenia whilst sharing no common symptom. When one bears in mind that many of these symptoms are also common to other conditions, it is hardly surprising that the differential diagnosis of schizophrenia proved difficult (e.g. Kendell & Gourlay, 1970).

These difficulties in defining schizophrenia have not gone unheeded by psychiatrists. Major efforts have been made to standardise the diagnosis. Thus, in Britain, the construction of the Present State Examination (P.S.E.: Wing, Cooper & Sartorius, 1974) and its use in large multinational studies, such as the International Pilot Study of Schizophrenia (IPSS), has served to improve the reliability of the diagnosis of schizophrenia - and, of course, the reliability of the diagnosis of other clinical disorders which it measures. This improvement resulted in part from the precise nature of the PSE itself, and also because one of the benefits of the IPSS was to highlight the different diagnostic practices prevalent in countries such as Britain, America and Russia. In America too, efforts have been made to render psychiatric diagnosis more reliable, first with the publication of the third edition of the Diagnostic and Statistical Manual (DSM III, A.P.A. 1980), and subsequently of DSM IIIR (A.P.A., 1987) which has helped to standardise the diagnostic process still further.

Dissenters have argued (i) that this hard-won international agreement is hardly surprising when one considers that the individuals involved undergo similar training, are socialised in the same profession, etc., and (ii), that these diagnosticians are assuming that they are identifying something with genuine scientific status (Bentall et al., 1988).

This second point relates to the validity of the concept of schizophrenia. Reliability is a necessary but not sufficient condition of validity - therefore, if a concept is not reliable it most assuredly is not valid. However, a concept can be reliable but invalid; reliability is no guarantee of validity (e.g. Spitzer & Fleiss, 1974).

A concept's validity can be assessed in a number of different ways, and these will be dealt with in the order followed by Bentall et al. (1988).

(i) Construct Validity.

As Wing (1974, 1978) observed, if the concept of schizophrenia is to be a valid one, the syndrome should manifest itself in a number of symptoms that tend to go together; moreover, these symptoms should not be common to a host of different syndromes. Yet the symptoms assumed to form the disease entity schizophrenia are by no means exclusive to the condition. Delusions are also common to affective disorders (Winters & Neale, 1983); thought disorder is common among patients diagnosed as manic (Andreasen, 1979), and hallucinations are so common as to lead some authors to suggest that they should not be taken as pathogenic of schizophrenia (Asaad & Shapiro, 1986).

Much of the work assessing the construct validity of the concept of schizophrenia has employed factor and cluster analysis, in the hope of demonstrating statistically the validity of the concept of schizophrenia. If schizophrenia was a valid disease entity, factor analysis would yield a common factor underlying various schizophrenic symptoms, and cluster analysis would identify a discrete group of people with similar schizophrenic symptoms (Bentall et al., 1988). Whilst factor analysis has yielded a common underlying factor corresponding to schizophrenia (e.g. Trouton & Maxwell, 1956), it has also been found to yield separate factors corresponding to groups of schizophrenic symptoms (Blashfield, 1984). Moreover, Slade and Cooper (1979) identified a methodological flaw underlying any such attempt, namely, that because patients with fewer

symptoms are less likely to be hospitalised, factor analytic studies of hospital populations (such as Trouton and Maxwell's) run the risk of identifying invalid factors. This objection applies equally well to cluster analysis.

The case for the construct validity of schizophrenia is weakened further by the finding that people showing some schizophrenic symptoms, though insufficient for a firm diagnosis, are relatively common (e.g. Cochrane, 1983; Dohrenwend & Dohrenwend, 1974). Much recent research has focused on the existence of 'schizotypal' traits within the normal population. Results suggest that many normal people are willing to report psychotic-like experiences (Bentall & Slade, 1985a; Chapman & Chapman, 1980; Claridge & Broks, 1984). Indeed, the American Psychological Association has introduced the notion of 'schizotypal personality disorder' to classify just such people who show a tendency towards schizophrenic symptomatology (DSM III: APA, 1980). Thus, the distinction between schizophrenia and the normal population, like the distinction between schizophrenia and other clinical syndromes, is blurred.

(ii) Predictive Validity.

Another requirement of a valid concept is that it enables one to make new predictions (Neale & Oltmanns, 1980). Within the clinical sphere this inevitably entails saying something about the likely prognosis, and about what kinds of treatment are most likely to be beneficial. Recent studies have suggested that not only is the outcome of schizophrenia highly variable, but so too is the course of the disorder (e.g. Bleuler & Bleuler, 1986). Ciompi (1980) followed up a large group of schizophrenics over a period of more than thirty years, and found that 30% were judged completely recovered, 26% were said to be partially recovered, and only 20% were judged still severely chronically ill. In M. Bleuler's (1978) follow-up study, only 10% of the patients assessed showed the type of chronic disease course described as typical in the early writings of Kraepelin and E. Bleuler, and, of these, some may well have been

the product of custodial care. Variable outcome would be far less of a problem, if, on the basis of symptomatology, it could be predicted which prognosis was most probable for a given patient. However, Strauss and Carpenter (1977) found social variables (such as the client's work performance and social contacts) to be better predictors of outcome than the client's specific symptomatology. There is also evidence that the type of family setting can influence outcome (Vaughn & Leff, 1976). Clearly, recovery from schizophrenia is variable and dependent on a variety of both clinical and non-clinical factors.

On the question of treatment, there is little to suggest that the diagnosis of schizophrenia is a valid predictor of response to treatment. The widespread use of neuroleptics with patients diagnosed as schizophrenic appears to benefit only a small proportion of those treated: typically, the differences in outcome between medicated and non-medicated patients are small (e.g. Crow, MacMillan, Johnson & Johnstone, 1986). There is also evidence that psychotherapy can be of benefit to people diagnosed as schizophrenic (Karon & VandenBos, 1981), as can family therapy (Barrowclough & Tarrier, 1984) and cognitive-behavioural therapy (Watts, Powell & Austin, 1973). When one bears in mind the diversity of factors discussed above which have been found to influence the course of the disorder, it may come as little surprise that a number of different approaches to treatment may be of benefit to people diagnosed as schizophrenic.

(iii) Aetiological specificity.

A final indicator of the validity of the concept of schizophrenia is its aetiological specificity. In the the search for causal agents in schizophrenia, an enormous amount of data has been collected. The search for a genetic cause of schizophrenic breakdowns has long been a source of much controversy, and conclusive evidence of a genetic cause proved elusive (Lidz & Blatt, 1983; Lidz, Blatt & Cook, 1981; Rose, Kamin & Lewontin, 1984). This debate recently came to life again with the findings published by a research team at the Northwick Park

Hospital in Middlesex who claimed to have demonstrated that the gene for schizophrenia was located on the sex chromosome (Crow et al., 1988, in Read & Ramsay, 1988). Crow argued that his theory might explain the close link between gender and schizophrenia: for example, although equal numbers of men and women are diagnosed as schizophrenic, in men the onset is earlier and the outcome worse. However, Crow's explanation was at odds with another genetic account for the emergence of schizophrenia put forward recently by a research team at the Middlesex Hospital in London (Gurling et al., 1988, in Read & Ramsay, 1988). This group proposed that the abnormality lies not on the sex chromosome but on chromosome five, and claimed to have identified a number of different varieties of schizophrenia. Gurling's results conformed to the model of a single dominant gene that is not completely penetrant, so that whether the disorder was manifested would depend on other genetic and environmental factors (Read & Ramsay, 1988). Consequently, not all individuals with the gene for schizophrenia go on to manifest clinical schizophrenia. Clearly the search for a genetic cause for schizophrenia remains very much alive.

Although the specific physiological processes underlying schizophrenia remain elusive, it is widely held that schizophrenia results from a form of altered brain function such as that produced by certain drugs (Oatley, 1985). One way of understanding particular schizophrenic experiences is to compare them to the experiences of people suffering from Parkinson's disease. It is well established that Parkinsonism results from depletion of the neurotransmitter dopamine. To counteract the effects of Parkinsonism, many clients were given a precursor drug, L-dopa, which increases the availability of dopamine. However, in a number of cases this was found to lead to psychotic-like symptoms. This led some researchers to propose that schizophrenia was the result of a hypersensitivity of dopamine synapses. Hence, it is often argued that the effect of antipsychotic drugs in schizophrenia is to change the availability or effectiveness of transmitter substances. However, although biochemical research has suggested that dopamine over-activity plays some role in schizophrenia (Owen, Owen,

Poulter & Crow, 1984), even this has been disputed (Gattez, 1983; Mackay, 1982). Clearly, this in no way shows that there is no biological cause, but simply that one has yet to be found. Attempts to explain schizophrenia as resulting from stressful life events have also led to similarly equivocal conclusions (Rabkin, 1980; Bentall et al., 1988).

In summarising the quest for the cause of schizophrenia, Bentall et al. (1988) remarked that:

' given that schizophrenia is an entity which seems to have no particular symptoms, which follows no particular course and which responds to no (or perhaps every) particular treatment, it is perhaps not surprising that aetiological research has so far failed to establish that it has any particular cause.'

It seems that while progress has been made towards making the diagnosis of schizophrenia reliable, the question of its validity remains at best open. Out of this confusion has emerged a number of diverse research strategies, each attempting to advance our current understanding of the nature and cause of the symptoms subsumed under the diagnosis of schizophrenia. These strategies are discussed in the next section.

2.4. Possible future directions for research on schizophrenia.

One response to these problems with the validity of the concept schizophrenia has been to continue to employ the concept on the grounds that it is still the best building block upon which to base future research efforts. In a response to the paper by Bentall et al. (1988), Wing (1988) largely ignored the problems associated with the validity of the concept of schizophrenia, preferring instead to deal with issues relating to its reliability. Wing emphasised the need for the continued improvement of the concept's diagnostic reliability and for increased biological investigation in the hope of relating various combinations of symptoms to possible causes or pathologies. Wing gave schizophrenia as the starting point for a further

series of disease theories (most of which he suggested would be wrong) a good prognosis. Clearly others share Wing's view. A recent document by the Medical Research Council (MRC, 1987), to which Wing contributed, concluded by offering ten recommendations for future research on schizophrenia: (i) genetic investigations; (ii) neuropathological studies of post-mortem brains; (iii) studies of synaptic connections, in particular brain regions; (iv) brain NMR and isotope imaging studies; (v) clinical trials of preventative medication and other care; (vi) clinical studies of abnormalities of thought and intention involving EEG and MEG; (vii) neuropsychological studies of dopamine pathways; (viii) evaluations of services to patients; (ix) more epidemiological studies; and (x) studies of symptom identification. This would suggest, that in spite of the growing call to dispense with the concept of schizophrenia on scientific grounds, schizophrenia research, and particularly physiological research, will continue to flourish.

Another option open to clinicians is to adopt new ways of classifying abnormal states. Eysenck, for example, questioned the value of the traditional system of classification within psychiatry. He argued that there was no strong evidence to support the traditional grouping into discrete categories, and proposed a dimensional system of classification (Eysenck, Wakefield & Friedman, 1983). Eysenck offered three dimensions: psychoticism, neuroticism and introversion-extraversion, with patients being located on each of these three axes. Thus, for instance, in the case of someone assigned to hysteria in a categorical system, Eysenck's theory predicts that he or she would have high scores on the axes of neuroticism and extraversion, and a low score on the psychoticism axis. However, subsequent research has not confirmed such specific predictions (Gelder et al. 1983). Alternatively, a hierarchical classification system may be preferred to the traditional categorical one (e.g. Foulds & Bedford, 1975), and it has even been proposed that psychiatric symptoms are distributed in a more or less random fashion (Slade & Cooper, 1979).

Whichever system is taken up, it seems likely that it will have to take account of the apparent continuum that exists between psychotic and non-psychotic experiences. Research into schizotypal traits in normal individuals is already well underway, and results, though preliminary, have been encouraging (e.g. Chapman & Chapman, 1980; Miller & Chapman, 1983; Rawlins & Claridge, 1984; Bentall et al., 1988). The concept of schizotypy is not new. In a classic paper, Meehl (1962) addressed the issue of whether a genetic base to schizophrenia need undermine the importance of psychological factors. His point was that this need not be so, since 'clinical schizophrenia' as such could not be inherited, containing as it did elements which were learned. Meehl proposed a genetic mutation as underlying schizophrenia, which produced a phenotypic consequence Meehl labelled schizotaxia. The imposition of a social learning history on schizotaxic individuals resulted in the personality organisation schizotypy. Whilst all schizotaxic individuals became 'on all actually existing social learning regimes' schizotypic, only a small subset would actually go on to manifest clinical schizophrenia. In fact Meehl's discussion of the possible nature of a genetic cause for schizophrenia, and its implications for psychological treatment, has close links with the findings published recently by Gurling et al. (1988) described in the above section on aetiological specificity.

Subsequently Zubin and Spring (1977) posited a vulnerability model for the emergence of schizophrenia which was very close in kind to Meehl's conception of schizotypy. The authors proposed that each individual was endowed with a degree of vulnerability which, under certain circumstances, would express itself in an episode of schizophrenic illness. Zubin and Spring argued that vulnerability comprised two main elements: the inborn and the acquired. Thus, Zubin and Spring contended that 'the primary persistent characteristic of the schizophrenic was his vulnerability, not his disorder' (p.117).

Drawing an analogy with the systemic diseases, Claridge (1985) argued that the underlying disposition to schizophrenia lay in a continuously variable set of characteristics (schizotypy) distributed in the population as a whole, and formed part of normal individual variation in personality and cognitive functioning. Claridge proposed that these characteristics were partly under genetic control, with schizophrenic disorders occurring as a psychological reaction to stress in certain highly predisposed individuals. Like other sources of variation, Claridge argued that these characteristics were continuous in nature, had discernable correlates in the nervous system, and were probably under polygenetic control. Schizophrenia was thus construed as being a psychobiological reaction to stress, where in severe cases a discontinuity with normal functioning would be in evidence, whilst in less severe (i.e. borderline) cases, or in states of remission, there would be an apparent continuity with the normal. Significantly, there is already evidence to suggest that a multidimensional model is needed to account for individual variations in such schizotypal traits (Chapman, Chapman & Miller, 1982; Claridge, 1987).

A final research strategy open to clinicians is to study the individual symptoms of psychosis, as opposed to the hypothesised psychoses themselves. This idea is by no means new (Bannister, 1968; Slade & Cooper, 1979). Single symptom research can be justified in either of two ways. One line of defence was spelled out by Persons (1986) who offered five distinct advantages to the study of single symptoms, irrespective of the validity of the syndromes to which they purportedly belonged. These were:

- (i) the avoidance of problems of diagnosis and classification
- (ii) the focus of attention on phenomena that are usually ignored
- (iii) the facilitation of theoretical development
- (iv) the recognition that clinical phenomena are related to normal behaviour
- (v) the potential improvement in classification which might accompany a better understanding of individual symptoms.

It is therefore quite possible to look at particular symptoms of psychoses, whilst retaining (and indeed hoping to confirm) a belief in the existence of psychiatric syndromes. Alternatively, single symptom research has been promoted on the grounds that psychiatric diagnosis is scientifically untenable, and should be abandoned (Bentall, 1989; Bentall et al., 1988).

For whichever reason, single symptom research is now well underway. The study of hallucinations, for instance, has progressed steadily for the past two decades. A multitude of variables has been found to affect the probability that a person will hallucinate (Slade, 1976). These include: periods of stress, and environmental factors such as periods of sensory deprivation or periods of unpatterned stimulation (i.e. white noise). In spite of attempts to establish a perceptual abnormality underlying the experience of hallucinations, the evidence to date does not support such an account; research in this area is not clear cut and generally does not support the suggestion that hallucinations result from any such abnormality (Slade, 1976; Catts, Armstrong & McConaghy, 1980). An alternative approach has been to suggest that hallucinations result from a failure to distinguish internal from external events. Johnson and Raye (1981) argued that such distinctions are inferential in nature - that is, it is not immediately obvious whether a perceived event is self-generated, or generated by the external world. As such, a hallucination would be a kind of causal misattribution. There is already support for such a hypothesis: Heilbrun (1980) found that hallucinators were relatively poor at recognising their own previously recorded

thoughts, while Bentall and Slade (1985) used a signal detection analysis to demonstrate that hallucinators display a bias towards attributing experiences to an external source in conditions of uncertainty. In keeping with a continuum view, Slade and Bentall have also demonstrated that there is a varying tendency amongst the normal population to hallucinate under certain conditions.

The progress made in the study of hallucinations testifies to the worth of a single symptom approach to research. A good deal of attention has also been directed towards the study of thought disorder, where results have been equally promising (e.g. Rochester & Martin, 1979; Harvey, 1983). If the research on hallucinations has a shortcoming, it may lie in the failure to address specifically the issue of content. It is valuable to know that there is nothing necessarily perceptually abnormal about somebody who hallucinates, and this is the merit of Slade and Bentall's contribution. But the content of hallucinatory experiences remains unaccounted for: the question then becomes not 'How is it that people hallucinate?', but 'Why is it that this particular client is reporting this particular hallucination?'. Some would undoubtedly say that the answer lay in the fact that the client was suffering from schizophrenia, thus drawing attention away from the need to explain the hallucination and towards the need to explain the schizophrenia. Others might wish to pursue a functional account, where links would be sought between the form and content of the hallucination, and some aspect or aspects of the client's life experience.

In contrast to the extensive study of hallucinations and thought disorder, little research has been carried out into delusions (Winters & Neale, 1983; Hemsley & Garety, 1986). This is a somewhat surprising omission given the wealth of empirical data relating to belief formation and maintenance in normals. The paucity of experimental work in this area, therefore, makes the study of delusions a stimulating challenge. Chapter III introduces the topic of delusions, the focus of the subsequent experimental chapters.

CHAPTER III. DELUSIONS

3.1 Defining Delusions

Modern understanding of delusions has been most profoundly influenced by the writing of Jaspers (Garety, 1985). Jaspers identified three defining characteristics of a delusion: (i) being held with absolute conviction (ii) being maintained in the face of counter arguments and experience and (iii) being of impossible content. Jaspers further distinguished three subgroups of delusions: (i) delusional perception (ii) delusional idea or notion and (iii) delusional awareness. Delusional perceptions are based on primary experiences. Such beliefs cannot be understood as having arisen in response to life experiences; that is, they are non-understandable. The oft-cited example, from Arthur (1964), is of a man who while looking at some marble tables in a cafeteria suddenly became convinced that this signified that the end of the world was coming. Delusional ideas are beliefs which can be understood in terms of the client's life experience; that is, they are secondary to some other experience. A secondary delusion might be a belief formed to account for auditory hallucinations, such as the idea that a radio receiver had been implanted inside the client's head as part of an experiment. Delusional awareness refers to a vague, unelaborated knowledge of 'immense and universal happenings' (Garety, 1985).

The Jasperian distinction between primary and secondary delusions is not still widely held (Bleuler & Bleuler, 1986). However, the Jasperian legacy can be seen in more recent attempts at defining delusions. For instance, the definition of delusions offered by Gelder, Gath and Mayou (1983) included the notion of resistance to change; the person who believed that there were persecutors in the adjoining house would not be persuaded otherwise by being informed that the house was empty, but more likely would counter that the persecutors left the house before it could be searched. The following definition of delusions is representative of much current thinking:

' A delusion is an abnormal belief. Delusions arise from disturbed judgements in which the experience of reality becomes a source of new and false meanings. Delusions usually have attributed to them the following characteristics:

- (i) They are held with absolute conviction.
- (ii) They are experienced as self-evident truths usually of great personal significance.
- (iii) They are not amenable to reason or modifiable by experience.
- (iv) Their content is often fantastic or at best inherently unlikely.
- (v) The beliefs are not shared by those of a common social or cultural background.' (Mullen, 1979, as quoted in Garety, 1985, p.26).

However, such definitions are problematical; individually each criterion presents difficulties, whilst together the confusion is heightened still further (Hemsley & Garety, 1986). Recent evidence has suggested that delusional beliefs are not always held with absolute conviction (Garety, 1985; Brett-Jones, Garety & Hemsley, 1987). Garety (1985), for example, demonstrated that the degree of conviction with which delusions are held can fluctuate over a number of weeks. As for being unmodifiable, there is evidence to suggest that delusions can be challenged successfully (e.g. Watts, Powell & Austin, 1973: this point will be discussed in more detail later in this chapter). Mullen accepted that total conviction and resistance to change alone did not serve to distinguish delusions. Rather, he argued that what was distinct about delusions was the idiosyncratic nature of the belief content, to which his last two criteria, i.e. (iv) and (v), referred. However, even here there are difficulties. Jaspers himself observed that any individual could assert a belief not shared by his or her peers. Furthermore, the concept of bizarreness appears to be difficult to measure reliably (Kendler, Glazer & Morgenstern, 1983). This issue is complicated further by the claim that what is unusual about delusions is not simply the content, but that the belief fulfills a function which non-delusional beliefs do not. Jaspers (1913) stated that the delusional content was of 'vital necessity' to the individual, and without it he or she would 'inwardly collapse'.

A promising new approach to defining delusions was initiated by Strauss (1969). Strauss analysed 119 interviews made as part of the World Health Organization International Pilot Study of Schizophrenia (IPSS; WHO, 1973) and discovered a large number of cases where both delusions and hallucinations had been described adequately and yet neither symptom could be fitted into a dichotomous category. Consequently Strauss proposed that these symptoms should be thought of as points on continua with normal behaviour: 'schizophrenia and the symptoms that characterize it are understandable exaggerations of normal function...When the distortion and exaggeration of certain normal psychological functions reach a certain level of eccentricity or begin to impair social function they are called symptoms' (Strauss, 1969, p.585). This is consistent with the existence of schizotypal traits in the normal population, discussed in the previous chapter. In an attempt at operationalizing his position Strauss tentatively offered four criteria for determining the position of an experience on these continua. These were: (i) the degree of belief conviction, (ii) the lack of direct cultural determinants, (iii) the amount of time spent preoccupied with the belief, and (iv) the implausibility of the experience. Thus, the emphasis in defining delusions was changed from stating that conviction must be absolute, that the belief must be unshakable, etc., to finding out the client's degree of belief conviction, whether his or her belief was modifiable, and so on.

3.2 The major types of delusion and their diagnostic importance

In an early classification of delusions Kraepelin (1896) argued for their importance, and particularly the paranoid forms, as part of the primary sub-types of schizophrenia. Kraepelin organized delusions into the six subsets of sin, persecution, reference, influence, exaltation and sexuality. Subsequently, influenced by psychoanalytic thought, E. Bleuler sought a common core of symptoms which would tie down the different subtypes. To this end Bleuler offered the two categories of basic and elaborated delusions. A basic delusion was a core belief which developed primarily through affective influences. An elaborated

delusion was a basic delusion which extended its influence across many areas of thinking.

As was discussed in Chapter II, far-reaching initiatives have been launched recently to improve the reliability of psychiatric diagnosis; inevitably this meant that the diagnosis of delusions improved. Information from the nine participating countries in the IPSS (WHO, 1973) yielded a high reliability for the diagnosis of all types of delusions among the different centres. Good reliability for the diagnosis of delusions has also been found among individual diagnosticians (e.g. Endicott & Spitzer, 1972). The IPSS also suggested that the diagnosis of individual types of delusion (persecution, grandeur,..) was highly reliable, with correlations ranging from 0.93 to 0.95. Table 3.1 summarizes the major types of delusion.

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However, the question remains as to whether identifying delusions reliably is of diagnostic value; that is, does the presence of a particular type of delusion influence the clinical diagnosis? Whilst there is no one-to-one relationship between different types of delusions and diagnoses, there are suggestive links. In the IPSS 96% of clients who reported delusions of control were diagnosed as suffering from schizophrenia or paranoid psychosis, whilst 92% of those clients who reported grandiose delusions were diagnosed as suffering from manic psychosis (Winters & Neale, 1983). Indeed, it does appear to be the case that certain types of delusions are of diagnostic significance. The diagnosis of schizophrenia, for example, is heavily influenced by the presence or absence of delusions. In the Research Diagnostic Criteria (RDC: Spitzer, Endicott & Robins, 1978) four of the eight symptoms for an active phase of schizophrenia are types of delusions. In DSM III three of the six criteria for an active phase of schizophrenia refer to delusional thinking. Differences in the nature of delusions may also be of value in the differential diagnosis of schizophrenics and non-schizophrenics. Carpenter, Strauss and Bartko (1974) found that the delusional beliefs of people diagnosed as schizophrenic tended to involve many areas of their lives, whereas the delusions common in psychotic depression and mania tended to be less pervasive.

3.3 Theories of Delusions: a selective review

Although there is a lack of empirical research investigating delusions, there is no such dearth of theoretical speculation. In an attempt at organizing the multitude of theoretical explanations of delusions, Winters and Neale classified them into two broad groups. The first of these they termed motivational. Central to these theories is the notion that delusions come about through some underlying psychological motivation. In the present review two types of motivational account will be discussed with examples: attributional theories, and relief from aversion theories. The discussion will then move on to the second class of theoretical explanations of delusions - those Winters and Neale termed defect theories. Theories will be discussed which have postulated defects

in reasoning ability, brain structure, attention and information processing.

Maher (1974) proposed that delusional clients suffer from basic perceptual anomalies which are essentially biological in nature. These anomalies leave the individual prone to experience abnormal perceptual experiences in the form of intense and vivid sensory input. On the face of it Maher's theory may seem to belong more in the section on defect theories, but Maher argued that the unusual content of delusions was not due to any defect in reasoning ability but to the nature of the perceptual experience: abnormal perceptions demanded abnormal explanations. According to Maher, the reasoning processes by which delusions are formed do not differ from those underlying normal beliefs. Thus, to Maher delusions were attempts on the part of individuals experiencing unusual percepts to make sense of their experiences. Maher argued that the motivating force behind the formation of delusions was the psychological need to account for the unusual perceptual experiences - that is, the primary underlying motivation was attributional. The view of delusions as explanatory devices which though incorrect are not pathological in and of themselves has since been adopted by Nisbett and Valins (1972). In fact Nisbett and Valins moved further away from the defect theorists than Maher, by observing that one could view a delusion as a way of accounting for particular experiences without assuming that those experiences arose due to some biological anomaly. Rather they argued that it might be the social context in which the individual interacted which was peculiar; just as sensory deprivation can lead to minor delusions, so to 'the isolated, distrustful individual who persistently ignores consensus information would be apt to develop bizarre explanations for his "normal" behaviour.' (p.141).

A different kind of motivational explanation of delusions was forwarded by Freud (1915). In seeking to explain the emergence of persecutory and grandiose delusions, Freud shifted the emphasis away from description and classification towards one of genetic endowment and personal significance (Winters & Neale, 1983). Freud suggested that both persecutory and

grandiose delusions stemmed from denial and projection of homosexual wishes (and, in later accounts, aggression). The psychological motivation behind the formation of delusions was the need to avert the anxiety inherent in acceptance of these homosexual wishes. Freud argued that as a defense mechanism to protect the ego these unacceptable feelings of homosexual love were distorted and projected. In the case of persecutory delusions, for example, the thought 'I, a man, love him', was transformed initially into the thought 'I, a man, hate him', and finally, into 'He hates me, so I am justified in hating him' (Winters & Neale, 1983, p.238). Central to Freud's position was the notion that delusions were functional reconstructions of reality motivated by the need to protect the ego. Although Freud's theory of the development of persecutory and grandiose delusions has not received empirical support, its central tenets can be seen in many subsequent theories of delusional thinking.

Strongly influenced by Freud, Cameron (1959) forwarded a detailed developmental theory of paranoia. As in the account put forward by Freud, the underlying motivation behind the formation of delusions was assumed to be the need to protect the ego from unmanageable anxiety, and the mechanisms through which this was achieved were assumed to be denial and projection. Cameron's developmental model comprised the subsequent stages of withdrawal, followed by a period of unstructured anxiety, and finally a focusing of the projection in the formation of a paranoid pseudo-community. Cameron contended that the initial period of withdrawal takes place as a consequence of the unsatisfactory nature of the individual's social interactions. During his or her period of withdrawal, Cameron argued that the individual experiences anxiety inducing phantasies and conflicts, which subsequently are denied and projected. It is the projection of these anxiety arousing conflicts which Cameron suggested form the beginnings of paranoid thinking. This projection freed the individual from inner turmoil and anxiety, but had the effect of making the ego-threatening anxiety seem to be coming from the outside. Cameron argued that following the withdrawal phase, the individual seeks to renew contact with the environment. However, the coupling of projected

blame and prolonged social inadequacy meant that he or she did so with increased vigilance and anxiety. As projections of mistrust became more frequent, the individual was led to form preliminary persecutory hypotheses. Within Cameron's theory, some clients are described as remaining at this stage of paranoid development, whilst others go on to develop full-blown paranoid theories revolving around the pseudo-community.

Cameron's theory of the development of paranoia is an attractive blend of the psychological and social. The formation of delusions is understood functionally in terms of anxiety-reduction through denial and projection. Although the beliefs formed are paranoid, their sequential crystallization is also functional in that it enables the individual to renew contact with his or her environment. In structuring and guiding cognition a delusion provides stability and permits meaningful and interrelated interpretations of experience; the tragedy is that these interpretations are persecutory in nature. Like Freud, Cameron also implicated a failure to test reality effectively as being responsible, at least in part, for the formation of paranoid delusions: both argued that an individual who was competent at reality testing would recognize the falsity inherent in an early paranoid hypothesis. In both theories the developmental origins of the paranoid individual's failure to reality-test were assumed to be poor levels of premorbid socialization and identification. Unfortunately, again like Freud, Cameron's theory has not been born out empirically. When paranoid and non-paranoid individuals are compared on premorbid adjustment indices the paranoids actually show a better premorbid adjustment (Zigler & Levine, 1973).

In the early and somewhat primitive behavioural theories of delusions the motivation was supplied by a simplistic application of the reinforcement principle. Ullman and Krasner (1969), for instance, proposed that bizarre and unusual speech in psychotic clients was maintained by positive reinforcement, and that a history of this allied to a lack of reinforcement for appropriate behavioural responses could explain the syndrome. Such claims were theoretically weak, as they were based on the finding that

schizophrenic behaviours could be altered by the application of simple reinforcement and punishment procedures. The fact that a condition can be treated in a certain way does not therefore entail that it was also acquired in a particular fashion (London, 1970). A similar theoretical leap from treatment to aetiology was seen in some of the theoretical explanations of depression discussed in Chapter I.

Subsequent behavioural theories of delusions have been more sophisticated. Haynes (1986), concentrating on the paranoid behaviours, still argued that delusions were learned but adopted an interactional model which allowed for multiple causality. Layng and Andronis (1984) conceptualised both delusions and hallucinations as instances of verbal behaviour (Skinner, 1957). Following on from Salzinger (1974) they observed that functional relations could be seen among many psychotic behaviours and the social environment. Whilst acknowledging that delusions frequently involved huge personal 'costs', they argued that delusions could still be maintained through positive reinforcement if the alternative behaviours were more maladaptive still (cf. Goldiamond, 1975). The behaviourist position is unusual and beneficial on two counts. First, it prevents the theorist from viewing delusions in isolation; the extent to which delusions are or are not maintained by the environment is an empirical question and one which needs to be addressed. Second, the clinician is required to consider explicitly what might happen if the individual did not behave in a delusional fashion; what are the alternative tacks open to the client and are they more or less aversive than the delusional one?

In contrast to motivation theories, defect theories propose that 'delusions occur because of some type of fundamental defect in the individual' (Winters & Neale, 1983). Whilst motivational and anxiety-reducing factors may be present they are considered to be of secondary importance.

E. Bleuler (1911) proposed that delusions came about through an underlying defect in thinking, which Bleuler believed to be the central feature of schizophrenia. This thought disorder

took the form of a breakdown in the associative pathways and resulted in the loss of coherent and goal-directed thought and speech. This disruption in thinking led in turn to an increase in the strength of the affective influences, which Bleuler defined broadly to include emotions such as anger and fear, and drives such as sexual satisfaction and power. The overactive affective influences undermined further the faculty for logical reasoning and produced delusional ideas. Thus delusions were seen as the product of the interaction of formal thought disorder and affective disturbances (Winters & Neale, 1983). However, this theoretical account could not explain the emergence of all delusions. In the first instance not all delusional clients have thought disorder (*ibid.*), and second it is not sufficiently common for there to be an increase in the affective influences during delusion formation (Spitzer et al., 1978).

Another way abnormal reasoning has been implicated in the development of delusions is in terms of attributional style. As was seen in Chapter I, Abramson, Seligman and Teasdale (1978) postulated that depressed individuals tended to make internal, stable and global attributions about negative events. Kaney and Bentall (1989) investigated the attributional style of clients with persecutory delusions, and discovered a tendency to make external, global and stable attributions for negative events. That is, like depressives the paranoids viewed the causes of bad events as both wide reaching and permanent, but whereas the depressives saw these causes as reflecting personal shortcomings, the paranoids saw them as reflecting the failure of others. Kaney and Bentall further found that the paranoid clients tended to make excessively internal attributions for good events, leading the second author to suggest 'that paranoid and grandiose delusions might result from the same cognitive traits' (Bentall, 1988, p.24). In another study, Bentall and Kaney (1989) investigated the attributions made by clients with persecutory delusions for social events that did not involve themselves. Clients were asked to make judgments about a number of actor-victim interactions. Paranoid clients were found to make more person attributions (i.e. to blame the actor) than the controls. However, although the paranoid clients tended to be more confident in their judgements,

they were found to be just as sensitive to contextual clues as the controls.

Pavlov (1934) proposed a defect in brain structure to account for delusions of both influence and reference. Extrapolating from his animal studies Pavlov argued that certain cells in the sensory cortex may have a 'pathological inertness' which created an excitatory process in the brain. This excitation led to the activation of cells from this region of the cortex, which were responsible for sensations, feelings and perceptions, to be activated (Winters & Neale, 1983). Thus, Pavlov argued that delusions were formed when the normal flow of thought was disturbed by the activation of irrelevant material. Although Pavlov's theory has not been subjected to empirical test, the key notion of unimportant information interrupting the flow of thought has since been adopted by a number of theorists. For instance, the 'defective filter' theory of schizophrenia proposed that schizophrenic symptomatology stemmed from a defect in the filter which separated relevant from irrelevant stimuli (e.g. Payne et al., 1964; Cromwell, 1968). Also Frith (1981) proposed that schizophrenia was the result of a defect in the process whereby behaviour became automatic and unconscious. Whereas in normal behaviour a variety of mature skills, including motor abilities like riding a bicycle and perceptual abilities such as reading, underwent such automation, this 'fossilization of behaviour' (Vygotsky, 1962) was disrupted in schizophrenics. Delusions of thought insertion, for instance, were thus seen as resulting from an awareness of processes which were normally unconscious.

Anscombe (1987) also suggested that the delusional beliefs of those people diagnosed as schizophrenic stemmed from an inability to sustain an intentional focus to attention. Anscombe argued that the schizophrenic's attention typically was captured and often held for many minutes by incidental stimuli (p.247). That is, the schizophrenic's attention was caught not by something of particular relevance or salience, but because attention did not shift back to what he or she had been attending to. Effectively the process ran backwards, with stimuli appearing to be significant simply because they caught attention. Delusional thinking came

about when the salience of the attention-capturing stimuli was then interpreted to mean something. That is, delusions were a reaction to a radical change of experience brought about by the 'capturing of attention, the apparent role of external circumstances in assigning meaning, and the "glow" of significance emitted by objects' (p.250). Like Maher, Anscombe argued that delusions were essentially attempts at making sense of abnormal experiences. However, unlike Maher, Anscombe did not accept the view of delusions as 'sane explanations' of abnormal experiences. Rather, Anscombe argued that the sane conclusion for the client to draw was that he or she was suffering from 'schizophrenia, or something like it' (p.250), although there may be some clinicians who would not accept that this explanation was any more rational than a bizarre delusion! (cf. Bentall et al., 1988 discussed in Chapter II).

Heilbrun (1973, 1975) offered a defect theory of paranoia couched in the terminology of social learning theory, which suggested that persecutory delusions stemmed from defective information processing. Heilbrun argued that when faced with maternal rejection children adopted either of two adaptive styles, open or closed. Whereas the open adaptive style was characterized by attempts at initiating social contact, the closed style was marked by social withdrawal and perceptual defence. Heilbrun proposed that individuals with open and closed adaptive styles processed information in different ways, and that these different modes of information processing led to the formation of different types of delusions. Open style thinkers processed evaluative information in an intricate and biased manner involving denial, projection and the making of premature attributions. This way of acquiring information led to an 'information overload', and resulted in anxiety-invoking disorganized thinking. Heilbrun suggested that in an attempt to reduce their confusion and anxiety, open style thinkers simplified their information processing by organizing it around a delusional premiss. In contrast, the closed style thinker avoided the processing of evaluative information in an active effort to protect his or her fragile self-esteem. Through projection the outside came to be seen as a threat, initially to the individual's seclusion

and subsequently to the individual's self-esteem. Finally, Heilbrun argued, these paranoid thoughts were consolidated when the threat to the ego led the individual to look for information to confirm his or her paranoid ideas.

One of the motivations behind Heilbrun's model was his objection to the view of delusions as anxiety reducing, on the grounds that paranoid delusions frequently generated as much anxiety as they were supposed to alleviate. It was this objection which led Heilbrun to postulate an additional source of anxiety, in terms of information processing overload. However, if one thought in attributional terms it may be that persecutory delusions reduce not so much the overall amount of anxiety, as the nature of the anxiety. For instance, it may be that anxiety attributed to the failings and misdeeds of others is less threatening to an individual's self-esteem than anxiety attributed to his or her own shortcomings.

The literature on delusions is marred by an imbalance in favour of theory. More data are called for to assess the parameters of the different theoretical accounts for the formation of delusions. However, it does seem unlikely that one theory will emerge to account for all types of delusions; indeed, it may be that no single theory will account for all delusions of one type. Perhaps theoretical explanations of the different types of delusion will move away from accounting for delusions per se, towards a more individualistic approach. Certainly, justification for this position can be found. First, the recent attempts at defining delusions, discussed earlier, pointed to the degree of individual variability between individuals with delusions. Second, attempts at measuring delusions have revealed these beliefs to be (i) complex multidimensional phenomena and (ii) subject to a good deal of intra- and inter-personal variation. These latter developments will be discussed in the next section.

3.4 The measurement of delusional beliefs

As was discussed in Chapter II, over the past two decades psychiatric diagnosis has been made far more reliable. Consequently, to the extent that particular diagnostic systems

measure the presence and absence of delusions, the measurement of delusions can be said to have improved. However, diagnostic systems such as DSM III and the PSE focus primarily on the dominant theme of delusions; that is, whether they are persecutory, grandiose, and so on. Such diagnostic tools are not concerned primarily with the measurement of the different dimensions of delusional experience.

To develop further the view of delusions as multidimensional phenomenon (Strauss, 1969, discussed in the section on defining delusions), Kendler, Glazer and Morgenstern (1983) developed a rating scale to assess five dimensions of delusional experience. These dimensions were: conviction, that is, 'the degree to which the patient is convinced of the reality of the delusional beliefs'; extension, that is, 'the degree to which the delusional belief involves various aspects of the patient's life'; bizarreness, that is, 'the degree to which the delusional belief departs from culturally determined consensus'; disorganization, that is, 'the degree to which the delusional beliefs are internally consistent, logical and systematized'; and pressure, that is, 'the degree to which the patient is preoccupied and concerned with the expressed delusional belief'. Specifically, Kendler et al. addressed themselves to three questions. First, could their five chosen dimensions be measured reliably? Second, would high inter-correlations emerge between these dimensions, suggesting that they were not independent? Third, would factor analysis group the five dimensions into a small number of underlying factors that could further the understanding of delusional experience.

Of the five dimensions, only bizarreness proved difficult to rate reliably, with inter-observer agreement just .52. The inter-correlations among all five dimensions were 'uniformly low', leading Kendler et al. to conclude that 'none of the five dimensions measures the same basic phenomenon to any substantial extent'. This finding also offered support for the multidimensional view of delusions. Factor analysis of the five dimensions isolated two factors - involvement and construct. Involvement was so-named because it was linked both to degree of conviction and pressure. Construct, the second factor, was concerned with the way the

delusions were organized, and involved the degree of disorganization and bizarreness. Degree of extension was highly loaded on both factors.

Kendler et al.'s study raised two general issues about the nature of delusional behaviour. First, it is disturbing that the concept of bizarreness should prove difficult to measure, as bizarre content has been cited as one of the few points of demarcation between delusional and non-delusional beliefs (see the section on defining delusions). Furthermore, in DSM III diagnostic importance is attached to the distinction between bizarre and non-bizarre delusions. Second, the preliminary support offered for a multidimensional view of delusions complicates the issue of 'recovery' considerably, because it raises the question of which dimensions are to be the major indices of clinical improvement. Would a reduction in any of Kendler et al.'s five dimensions be taken as a sign of recovery? This issue is complicated still further by the possibility of a decrease on one dimension coinciding with an increase on another (Kendler et al., 1983, p.468).

Hole, Rush and Beck (1979) demonstrated that the different delusional dimensions do change independently of one another during the course of a psychotic episode. They conducted a series of interviews with eight delusional clients, two females and six males, each of whom satisfied research diagnostic criteria for schizophrenia (Feighner et al., 1972). Four dimensions of delusional experience were measured. These were: conviction, accommodation, pervasiveness and encapsulation. Belief conviction was measured by asking the client to rate how strongly the belief was held on a scale from 0 to 100 per cent. Accommodation considered the degree to which the belief was modified by external events. Pervasiveness referred to the degree of preoccupation with the belief, and the extent to which the client was motivated to act upon the belief. Both pervasiveness and accommodation were assessed on the basis of the client's self reports. Encapsulation referred to a decrease in preoccupation without a decrease in conviction. (In fact encapsulation is not an independent dimension, but rather is dependent on both

conviction and pervasiveness). Hole et al. were not interested primarily in challenging delusions, but rather in understanding the phenomenology of delusional thinking. In particular they wanted to know whether delusional beliefs rested on current experience and how clients dealt with instances of disconfirmation. Furthermore, if there was a change in some aspect of the delusion, they wanted to know how the client accounted for this change.

Four clients (Group 1) showed no significant change. Two (Group 2) of the four clients who demonstrated clinical improvement encapsulated their beliefs; that is, they experienced a major reduction in degree of pervasiveness but no change in conviction. Two clients (Group 3) experienced marked changes in both pervasiveness and conviction. Thus, although in two cases (Group 3) a major reduction in the amount of time spent dwelling and acting upon the beliefs went hand in hand with a significant drop in belief conviction, in two other cases (Group 2) pervasiveness changed independently of belief conviction (i.e. the beliefs were encapsulated). One of the Group 2 clients provided a stark example of encapsulation. At the start of the study he was spending 16 hours a day amassing evidence for several law suits he intended bringing against the government for having caused his nervous breakdown. However, two weeks after the close of the study, even though his belief conviction remained at 100%, this client announced that he had decided not to act upon several of his law suits because they were a 'waste of time'.

There were also individual differences in the extent to which clients both sought disconfirmation. Only the Group 3 clients subjected their beliefs to reality-testing, and even here reality-testing was only undertaken after these two clients had begun to doubt their beliefs. There were differences too in the extent to which clients accommodated disconfirmation. For example, in the case of one Group 3 client an instance of disconfirmation led her to reduce her degree of belief conviction: she was led to doubt her belief that the police were trying to kill her when she saw a policeman without anything bad happening. However, in stark contrast was the behaviour of one Group 1

client with whom Hole et al. implemented a reality-test to discover whether he could be made to accommodate disconfirmation. The test, which was unsuccessful, involved asking the client to demonstrate his alleged telepathic powers by identifying a written word that the interviewer (Hole) was concentrating on. The client accommodated his failure on this test without altering his belief in any way by attributing it to interference from the devil. These findings led Hole et al. to conclude that some delusional clients play an active part in assessing the truth of their beliefs.

Another study to look at ways of measuring delusional beliefs reliably was reported by Garety (1985). Garety measured belief conviction over a number of weeks using Phillips' (1977) modification of Shapiro's Personal Questionnaire (PQ: Shapiro, 1961). The PQ is a way of measuring changes in symptom intensity specific to an individual client, and has been used to measure a number of different symptoms. Garety was the first to use the PQ in its modified form to measure delusions; an earlier version of the PQ was used to measure delusions by Shapiro and Ravenette (1959). A PQ comprises a construction stage and an administration stage. At the construction stage the client and researcher define the belief in question and agree upon the wording for five successive statements of symptom intensity. In Garety's study, therefore, she and the client established the wording for the delusional beliefs, and for five successive statements of degree of belief conviction. In fact, two different sets of statements were employed to see if one was more sensitive to change. Both sets of wording are shown in the following example taken from the study:

Form (i)

That dogs avoid me is

definitely true
probably true
may be true or false
probably false
definitely false

Form (ii)

I know that	dogs avoid me
I believe very strongly that	dogs avoid me
I believe that	dogs avoid me
I have a few doubts that	dogs avoid me
I doubt that	dogs avoid me

Each statement was written on separate pieces of card, together with two further cards, one displaying the printed word MORE and one the word LESS. At the administration stage each of the cards was presented randomly and the client was required to say whether at that point in time he felt MORE or LESS certain of the belief than was stated on the card. This procedure was followed with each set of statements once a week for a total of ten weeks. The possibility of a client feeling that the symptom intensity stated on a particular card matched exactly his degree of conviction (i.e. he was neither MORE nor LESS certain than was stated on the card) was discussed by Phillips (1977). Whilst such instances may lead to error, the distortion would be only slight and the response pattern would still be consistent. As a reliability measure an identical procedure was conducted with control belief statements, such as 'I exist' and 'the sun will rise tomorrow'.

Two clients took part in the study. Responses on the PQ were scored on a six point ordinal scale, ranging from 0 (on those occasions when the client responded LESS to each of the five statement cards) to 5 (on those occasions when the client responded MORE to each card). Whilst the first client's responses to the control statements remained constant over the full ten weeks, responses to the delusional statements showed a fair degree of fluctuation. This was true for both sets of wording, although the second form proved more sensitive to subtle changes in conviction. The second client's responses to the control statements were also constant. However, his responses to the delusional statements showed considerable fluctuation - far more so than was the case with the first client. In the case of the second client, two of the three delusional beliefs being measured went from being rated as being definitely true at the start of the

study to being scored definitely false by the end of the ten weeks. This client's degree of belief conviction in his third delusion also fluctuated a great deal over the course of the ten weeks.

Garety's study demonstrated that quite subtle changes in belief conviction can be measured reliably over a number of weeks using a PQ. Clearly these results do not support either the notion that delusions are invariably fixed, or that they are always held with absolute or total conviction (cf. the section on defining delusions). The study suggested that far from being black and white, delusions are complex phenomena. For instance, whilst an increase in the second client's medication at week 6 appeared to have a major effect on the client's belief conviction, only two out of the three delusional beliefs were rejected. Ironically it was the belief held with least conviction during the first half of the study which, though held with reduced conviction, was not rejected by the close of the ten weeks. Moreover, the study is consistent with the view of delusions as being on a continuum with normal functioning, and does not support the view of delusions as discontinuous all-or-nothing phenomenon.

In a subsequent study Brett-Jones, Garety and Hemsley (1987) developed and extended this approach to measure five aspects of delusional thinking over time. These five dimensions were (i) fixity, that is, the extent to which belief conviction was stable over time (ii) preoccupation, that is, the amount of time spent thinking about the belief (iii) degree of interference, that is, the extent to which the belief impinged upon everyday living, and (iv) and (v) reaction to hypothetical contradiction and accommodation - two separate measures of susceptibility to change.

Conviction and preoccupation were measured using the modified version of the PQ (see Table 3.2.1 for details of wording). Interference was defined as 'those acts committed or omitted that were attributed directly to the delusional belief by the subject' (p.258). In practice interference was measured by asking clients the extent to which they felt that their beliefs directed and inhibited their behaviour. Responses to these

questions were ordinally rated on a four point scale ranging from no interference to severe disruption to normal activities (see Table 3.2.1). Accommodation measured both the clients' awareness of actual occurrences that were contradictory to their beliefs, and how these occurrences affected their beliefs. Accommodation was measured at the start of every session by asking the client whether anything had happened over the past week to alter his or her belief in any way. Reaction to hypothetical contradiction (RTHC) evaluated the client's potential for accommodation, by posing a hypothetical but plausible and contradictory occurrence and asking the client how this would affect the belief. The interviewer classified the responses to both accommodation and RTHC into the categories shown in Table 3.2.2.

Table 3.2.1 Summary of scales and categories: Conviction, preoccupation and interference

	CONVICTION	PREOCCUPATION	INTERFERENCE
Scale	6 pt ordinal	6 pt ordinal	4 pt ordinal
0	Do not believe	---	0 None at all
1	I doubt these things not at all....	I think about these things not at all....	1 Minor change e.g. smoked a cigarette
2	I have a few doubts that...occasionally	2 Disruption to hospital routine
3	I feel fairly sure that...some of the time	3 Severe disruption eg violence
4	I believe very strongly that...most of the time	
5	I know/am absolutely certain that..	...absolutely all the time	

NB. Scores on conviction and preoccupation fall between two verbal descriptions.

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Eight males and one female took part in the study, each of whom had a hospital diagnosis of schizophrenia or schizo-affective psychosis. Clients had a mean age of 39 years and each was being treated with major tranquillizers at the time of the study. At an initial interview a maximum of three delusional beliefs was agreed with each client. A separate PQ was constructed for each belief to measure conviction; preoccupation was measured for all three beliefs together. Clients were interviewed weekly for either six months, or until they were discharged if this came sooner. Other than when administering the five measures, each of which was taken at each interview, discussion of the delusions was avoided. Follow-up meetings were conducted between four and 10 weeks after discharge.

The reliability of each of the five measures was satisfactory, although the test-retest reliability of preoccupation was lower than that for conviction. Brett-Jones et al. speculated that this may have been caused by the retrospective nature of the preoccupation measure (see Table 3.2.1). Overall conviction was rated at 4 or 5 on 49 per cent of PQ administrations. Responses to preoccupation were biased in favour of the middle range; no client rated preoccupation at the maximum level of 5, and 59 per cent of the scores were either 2 or 3. Interference scores were also low, with no interference at all being reported at 61 per cent of interviews and the maximum score of 3 not being reported at all. Although an analysis of covariance among the measures of conviction, preoccupation and interference revealed that the conviction- preoccupation correlation was significant, Brett-Jones et al. observed that close inspection of the graphical evidence was more suggestive of an asynchrony between these two dimensions. Accommodation was rated zero at 69 per cent of interviews, although at some point each client did report an occurrence which led them either to reject their belief altogether or to lower their conviction in that belief. RTHC was rated either 0 or 1 on 76 per cent of administrations, indicating a general unwillingness to recognize hypothetical contradiction.

The study offered further support for a multidimensional view of delusions. First, for most clients there was an asynchrony between changes on the different measures, and second, different patterns of 'recovery' were observed. For example, as in Hole et al.'s study, in some cases conviction and preoccupation scores both fell; in other cases only conviction scores fell. Moreover, one client rated conviction at high levels throughout the study even though there were major reductions in both preoccupation and interference. Results on the accommodation measure did not support the view that delusional clients typically seek to disconfirm their beliefs. In many cases instances of disconfirmation did not occur naturally, and most clients did not actively seek such contradiction. Brett-Jones et al. reported that those client who did look to test their beliefs displayed a 'confirmation bias' reminiscent of normal behaviour (see Chapter I) - that is, they were far more willing to acknowledge confirmatory experiences such as hallucinations than they were to recognize occurrences that were disconfirmatory. This finding is consistent with the theoretical position that there are common processes underlying the formation and maintenance of normal and delusional beliefs (cf. Maher, 1974; Nisbett & Valins, 1972). Analysis of the responses to the reaction to hypothetical contradiction measure revealed that those clients who ultimately rejected their delusions responded to instances of hypothetical contradiction in a more rational way than those who did not. This led Brett-Jones et al. to speculate that this measure might be of value in predicting the probable outcome of a cognitive therapy designed to challenge delusions.

3.5 The Modification of Delusions

One of the first reported studies which attempted to modify delusional beliefs was a case study by Shapiro and Ravenette (1959). The client, a 38 year old male with a diagnosis of paranoid schizophrenia, believed that an association of people was attempting to change and punish him because of his history of pacifism and sexual misdemeanors. The modification procedure implemented jointly by Shapiro and Ravenette had three aims: (i) to show the palpable falseness of the beliefs through guided

discussion, (ii) to demonstrate that holding the belief was a sign of illness, and (iii) to show how people might come to have such an illness. As a control condition the authors also challenged the client's guilt feelings in a similar fashion. Four measures of change were used: a 20 point questionnaire to measure paranoid thinking, a 10 point questionnaire to measure guilt feelings, and two further 10 point questionnaires to measure depression and hostility respectively to see whether the discussion of the paranoid and guilt feelings affected these variables. The paranoid questionnaire was a mixture of items included specifically on the basis of the client's beliefs and items from a current rating scale (Sandler, 1954).

In total 16 interviews were conducted at a rate of four a week. The paranoid ideas and guilt feelings were each challenged at eight sessions; feelings of depression and hostility were not challenged directly. The total number of items on all four questionnaires was 50 and these were written on separate pieces of card. In an early form of Personal Questionnaire (PQ) the client was required to place each card under one of five headings, either 'This is definitely the case', 'This may be the case', 'I am not sure', 'This may not be the case' and 'This is definitely not the case'. Cards placed under these headings were scored 4, 3, 2, 1 and 0 respectively. Unfortunately results on the depression and hostility questionnaires were confounded by the client responding to the specific wording of the questions rather than to their content. There was no clear change in the scores on the guilt questionnaire. However, there appeared to be a change in the client's paranoid thinking, with the client losing 'all tendencies towards the unqualified acceptance of his persecutory delusions' (p.309). Whereas at the first testing the client rated eight paranoid items as 'definitely the case' (category 4), by the sixteenth and last testing no items were placed in this category. This change suggested that paranoid beliefs are open to modification. Given that the marked change in the client's degree of belief conviction was achieved in only eight sessions, Shapiro and Ravenette speculated that belief content, rather than resistance to change, might be the distinguishing feature of delusions (cf. Mullen, 1979, discussed in the section on defining delusions).

Watts, Powell and Austin (1973) argued that a very real danger with belief modification was what Brehm (1966) called 'psychological reactance', where too direct an approach served simply to reinforce the belief. Watts et al. offered four guidelines designed to keep reactance to a minimum. First, they recommended that the modification begin with those beliefs which are the least strongly held. In practice, Watts et al. advocated discussing as many counter arguments as possible; for example, where the paranoid belief concerned the behaviour of others to the subject, non-paranoid interpretations of people's intentions would be discussed (p.360). Second, they advised that clients be asked only to consider, and not to adopt, an alternative to their belief. Third, they proposed that the evidence for the belief be challenged, as opposed to the belief itself. Finally they recommended that the client be encouraged to voice the arguments against his or her belief.

Initially Watts et al. conducted a single case pilot study in order to assess the utility of their modification guidelines. The client was a 35 year old male with a 12 year psychiatric history and a diagnosis of schizophrenic with an immature personality. The client believed that people could see that he looked 'odd' and 'ill' and that this led them to provoke and annoy him deliberately. The problem was particularly acute with women and strangers. One of the consequences of this belief was that the client led a very restricted life: therefore, as well as the belief modification procedure, graded reintroduction to avoided social situations was instigated. An initial list of 20 situations was drawn up in which the client believed that he was provoked intentionally. The client rated each statement on a five point scale in accordance with how strongly he believed it to be the case. The statements were then discussed in the non-confrontational manner prescribed. Following the modification phase the beliefs were once again rated. Part way through the modification phase an additional list of paranoid statements relating to employment was drawn up. The second list of paranoid statements was rated and discussed in an identical fashion to the first list. To assess for more general clinical improvement a nine point PQ was drawn up which covered the full range of the client's complaints.

Results from the pilot study were encouraging. The ratings given to the first list of paranoid statements were significantly lower following the modification treatment. The ratings given to the second list of paranoid beliefs were also lower following the intervention, although the difference fell short of significance. Each of the PQ items was rated at the maximum level of intensity for the first few weeks of the study, but by the end of the modification all but one of the complaints was given the minimum score. However, because of the lack of experimental control these changes could not be attributed to the modification procedure. For this reason two controlled replications were performed.

In the replications three treatments were used sequentially. The modification procedure was preceded by a muscular relaxation technique and followed by brief in vivo desensitization to avoided social situations. Both clients were male and were diagnosed as schizophrenic. MW, the first client, believed that he looked unduly feminine and this led him to avoid mixing with people lest they should recognize this. A similar belief was also held by GS, the second client. As in the pilot trial, a list of the client's beliefs was constructed and rated on degree of belief conviction; the statements were re-rated at the end of each the three subsequent treatment phases. The treatment phases consisted of six sessions conducted over a three week period. Table 3.3 summarizes the effect of the interventions on these ratings.

Table 3.3 *Mean ratings (0-4) of strength of abnormal beliefs.*

	MW	GS
Before treatment	2.4	1.4
After relaxation	2.6	1.6
After belief modification	1.9	0.9
After desensitization	2.0	1.0

(From Watts et al., 1973).

In both cases the drop in mean ratings of the beliefs at the end of the modification treatment was significant, suggesting that the belief modification had produced a 'significant decrease in the strength of abnormal beliefs'. Moreover, these effects were achieved in only six sessions.

Milton, Patwa and Hafner (1978) also hoped to modify delusional beliefs, with the added intention of demonstrating, as opposed to assuming, that a directive confrontational approach did indeed lead to increased psychological reactance. Sixteen clients were selected on the criteria of having 'consistent, systematized delusions of at least 5 years' duration, in the absence of any other major psychological or behavioural disturbance' (p. 127). Ten delusional ideas were elicited from each client. Delusional intensity (conviction) was scored on an equal interval nine point scale, ranging from 'I definitely do not believe this' (0) to 'I am absolutely certain this is true' (8). Data analysis was based on each client's mean ratings of his or her 10 delusional ideas. Two secondary measures of change were employed, the Brief Psychiatric Rating Scale (BPRS: Overall & Gorham, 1962) and a modified version of a Social Anxiety Questionnaire (Falloon, Lindley, McDonald & Marks, 1977). Clients were allocated randomly either to a 'confrontation' or 'modification' group. In the confrontation group the most strongly held beliefs were challenged first, and the therapist denied continually the belief's validity in a polite but firm manner. Attempts were made to persuade the clients that they must be mistaken in their beliefs or they would not be in hospital. By contrast, in the modification group the discussion followed the guidelines prescribed by Watts et al. The modification began with those beliefs which the clients held least dogmatically, and whenever possible the therapist avoided disagreeing with the clients. The prevailing atmosphere was one of considering other possible explanations. For both groups the conversation was moved to a neutral topic either if the attempt failed or the client became too agitated. Each treatment lasted for five weekly sessions and a six week follow-up session was conducted with each client.

Results were based on the seven clients in each group who completed all the measures. Both treatments produced a slight but non significant fall in the degree of belief conviction after five sessions. However, subsequently at the six week follow-up there was a statistically significant fall in belief conviction for the modification group. This further reduction was also significantly greater than the fall observed in the confrontation group at the six week follow-up. The BPRS yielded similar results: scores for the modification group dropped significantly by the six week follow-up, although in this instance while the change was larger than the one observed in the confrontation group the difference was not significant. The social anxiety scores showed an opposite trend: it was the confrontation group whose scores dropped significantly by the six week follow-up, though the difference in change scores for the two groups was not significant.

Overall the study suggested that a confrontational style of belief modification did lead to increased levels of psychological reactance. For instance, while the conviction scores of four clients in the confrontation group were higher at the end of the treatment phase than at the start, no client in the modification group recorded higher conviction ratings at the close of the study than at the outset. Most of the reduction in belief conviction for the modification group took place between the close of the intervention phase and the six week follow-up. This suggests that non-confrontational verbal interventions initiate changes which continue after their conclusion. Not one of the clients in the modification group showed increased BPRS scores either at the close of the intervention phase or at follow-up. Higher BPRS scores were recorded by three clients in the confrontation group at the close of the treatment, and in two of these cases this increase was still in evidence at the six week follow-up. This led Milton et al. to conclude that 'the fall in strength of delusions appears to be associated with a worthwhile reduction in overall psychiatric disturbance' (p.127).

In Chapter I an example of attribution therapy was reported which successfully allayed a young man's fear that he was a homosexual. The goal of the study was to replace existing

maladaptive attributions by more rational and adaptive ones. This approach is consistent with the recommendation by Maher (1974) that the correct way to challenge a delusional belief is to acknowledge the reality of the person's experience and to offer a normal explanation in place of the delusion. In essence Maher's contention was that such a tactic may reduce psychological reactance. Johnson, Ross and Mastria (1977) adopted just this strategy in attempting to modify the delusional belief of a 37 year old male client who had been diagnosed tentatively as a paranoid schizophrenic. The client reported having had sexual intercourse twice with a 'warm form'. The first instance took place eight days before the client was admitted. He had been sitting naked on his bed when his penis became erect and he experienced a warm object pressing against his genitals which culminated in him ejaculating. This was followed by a similar experience the following week. Whilst the client was aware of the unusual nature of his claim he insisted that the experience was real and was frightened that the 'warm form' would occur again, possibly even at work. There were no other presenting problems.

On the third day of hospitalization an attempt at reattribution was begun. The client was assured that his problem was 'real' and every effort was made to view the experience with the warm form as normal instead of abnormal. It was suggested that it would be helpful to measure the presence of the warm form, so it was agreed that when next it occurred a penile strain gauge attached to a voltmeter would be fitted. Subsequently the form was reported and the gauge was fitted for fifteen minutes, during which no electrical potential was recorded. It was observed that throughout the trial the client lay on his side and moved his legs in a fashion sufficient for penile stimulation. A discussion of the episode followed at which both the lack of electrical stimulation and the leg movements were made known to the client. The client's feelings were then reattributed to a buildup of sexual tensions as a result of a prolonged period of abstinence and to the inadvertent masturbatory leg movements. It was further suggested that the client's abnormal explanation of the feeling may have arisen due to the shameful nature of the experience, allied to his limited contact with male peers. The client was

satisfied with this explanation and he re-labelled the experience as a feeling. Three follow-up meetings were conducted over a six month period and on each occasion the client reported a return to normal functioning both socially and at work. Over the follow-up period the client experienced several spontaneous erections that would previously have been attributed to the 'warm form'. Furthermore, over the same period the client resisted the suggestions from members of his family that his experiences indicated the presence of supernatural forms such as demons.

Hartman and Cashman (1983) conducted a belief modification which, they claimed, offered tentative support for the efficacy of a cognitive-behavioural approach to the modification of delusional thinking. Their claim was by necessity tentative because the study was plagued by methodological difficulties. Three clients took part in the study, which employed a crossover treatment design. The first client began a drug treatment for one month prior to beginning cognitive-behaviour therapy for a further month; medication was continued throughout the month of cognitive-behaviour therapy. The second client began treatment with four weekly sessions of cognitive-behaviour therapy, after which she felt that further treatment was not necessary and declined medication. The third client began with cognitive-behaviour therapy and then moved on to the drug treatment. Clearly employing a crossover design with effectively only two subjects renders firm conclusions impossible. In addition there was no direct measure of belief conviction, but only a measure of the extent of preoccupation and the degree to which the client felt able to regulate and control his or her delusional thinking. The study was further complicated by the extremely wide range of techniques employed under the rubric of cognitive-behaviour therapy. This included: non-confrontational discussion of the beliefs a la Watts et al.; techniques of modelling, flooding, thought blocking, behavioural rehearsal and reinforcement; and implosion or satiation training (Rachman, 1976). The authors summarized their cognitive-behaviour treatment as a coping skills approach designed to help the clients to identify and regulate problematic thoughts. It should be noted that in so far as this study was able to state that the interventions had been effective,

this statement applied equally well to the drug treatment as to the cognitive therapy.

Alford (1980) conducted a single case belief modification study on a 22 year old male with a diagnosis of paranoid schizophrenic (DSM III). The client believed that a 'haggly witch' followed him wherever he went; the client also reported hearing infrequent auditory hallucinations, and made reference to apparent visual hallucinations. The delusion had been present for over three years. The study employed an ABAB design (cf. Hersen & Barlow, 1976), where A refers to the baseline phase and B refers to the intervention phase. The treatment used by Alford borrowed heavily from the modification package designed by Watts et al. Alford challenged the client's belief by focusing discussions on the validity of the client's evidence for his belief. Alford encouraged the client to generate plausible alternative interpretations of the evidence for his belief, both during and in between therapeutic sessions. The client recorded his attempts at generating new interpretations of the evidence for his belief in a log book. The effect of the intervention was assessed by asking the client to rate both his degree of belief conviction and the extent of his preoccupation with his belief. Conviction was measured by asking the client to give a percentage rating, on the scale of 'certain it's just my imagination' (0%) to 'certain it's reality' (100%). In addition, informal external validation was gathered from nursing staff involved with the client who were unaware of the nature of the experiment.

During the baseline phase belief conviction fluctuated between 45 and 80% certainty. Over the course of the 15 day intervention phase conviction fell steadily, and the belief was rejected completely at the closing session. During the return to baseline conditions the effect was well maintained; conviction was rated at low levels at each of the seven sessions in this phase. During the final phase of the study, when the intervention was re-introduced, conviction ratings were extremely low, never going above 5% certainty. The preoccupation scores followed a similar pattern. There was an overall downward trend in the client's reported frequency of delusional thoughts, although the effect was

not so striking as the clear cut reduction in conviction scores. A three month follow-up meeting revealed that the benefits of the intervention were still in partial evidence. The client attributed his delusional ideation concerning the witch to his imagination. However, although during the intervention phases the client was encouraged to view the hallucinations as being his own thoughts, at the follow-up meeting he reported that he was not sure that this was the case and harboured thoughts that the source of the voices might be people from another dimension. Comments from the nursing staff suggested that the client was able to monitor and regulate his delusional thinking more effectively as a consequence of the intervention.

Design considerations.

In a section on the essential requirements of experimental design Shapiro set out the criteria that he thought ought to characterize any potential belief modification procedure (Shapiro & Ravenette, 1959). The first of these requirements was that the strength and quality of the delusions should be shown to vary systematically in accordance with experimental manipulations of the client's life situation. That is, changes in both the independent variable (the setting) and the dependent variable (the delusion) should be clearly identifiable and measurable. In addition to demonstrating experimental control, Shapiro also recommended that an experiment be an attempt to explain something. Thus, the changes made to the independent variable should be based on a theoretical position from which the subsequent changes observed in the dependent variable can be predicted. In short, predictable changes in the dependent variable should follow systematic and theoretically based changes in the independent variable.

The first consideration in terms of experimental design is to gain a measure of belief conviction (along with any other dependent variables) before the intervention is introduced. Typically researchers have administered each of their measures once just prior to the introduction of the interventions. The study by Alport (1980) was the only one to gather baseline data. However, even if the belief to be modified has been present for a

number of years a baseline is still required because the researcher needs to know what kind of responding is typical on the specific measures being employed. This requires a number of baseline data points before the intervention is introduced; one datum point is insufficient for this purpose. As was discussed in the previous section, great advances have been made recently in measuring delusions. The work of Garety (1985) and Brett-Jones et al. (1987) offers a reliable way to gain an ongoing measure of various aspects of delusional thinking. The PQ would seem to be the best measure of delusional dimensions currently available.

The second task facing the researcher is to demonstrate that any change observed in the dependent variable is due to the intervention. By the authors' own admissions the studies by Shapiro and Ravenette (1959) and Hartman and Cashman (1983) lacked such control. The two controlled replications by Watts et al. (1973) went some way towards meeting this requirement. Their measures, including one of belief conviction, were employed at the start of the study and at the conclusion of each of the three subsequent intervention phases. Watts et al. stated that as no significant change in belief conviction was observed following the two control treatments, and as a significant change in belief conviction was observed following the modification treatment, the observed change could safely be attributed to the belief modification. However, whilst this remains the most likely cause of the reduction in belief conviction, the effect might have been due to a variable other than the modification package. For instance, bearing in mind that the measures were employed only at the close of each intervention phase, it is possible that the effect observed during the modification phase was a delayed one from the prior relaxation treatment. This objection could have been offset in one of two ways. First, the order of the two control treatments could have been reversed, so that for one client the modification was preceded by relaxation and for the other by desensitization. Alternatively weekly data points could have been gathered during a baseline condition and throughout the intervention phases. In this latter, these data might have shown a continuation of baseline rate throughout the first intervention

phase, with an immediate change following the introduction of the modification intervention.

Another important issue concerns the need for an intervention to adhere to a well specified procedure. Only then can a component analysis be undertaken. When too many techniques are combined in one treatment it becomes impossible to say which 'intervention' produced a change in belief conviction. Thus, for example, even had the study by Hartman & Cashman (1983) involved a more rigorous experimental design, it would still be impossible to determine which of the multitude of interventions used was most effective in reducing delusional belief conviction. The component analysis begun by Milton et al. (1979) needs to be continued to tease out the most effective means of modifying delusional beliefs. A final design issue concerns follow-up data. The studies reviewed are mixed, ranging from no follow-up data (Watts et al., 1973) to six months (Johnson et al. 1978; Shapiro & Ravenette, 1959). Long term follow-up data is an essential requirement of clinical research, as the issue of the permanence of an effect is of critical interest clinically.

Drawing on this analysis, and the earlier discussion of the measurement of delusional beliefs, a number of key factors emerge which need to be included in modification research. These are:

- (i) That a number of delusional dimensions be measured.
- (ii) That a baseline phase be run prior to an intervention.
- (iii) That adequate experimental control of the dependent variables be established.
- (iv) That an intervention is specified clearly.
- (v) If more than one intervention is employed a component analysis be undertaken.
- (vi) That long-term follow-up data be collected.

One way of satisfying these criteria is to run an ABAB design (cf. Alport, 1980, discussed earlier). However, the prospect of withdrawing a successful intervention poses an ethical and clinical dilemma. Fortunately in multiple-baseline methodology there is an alternative to the ABAB design which also satisfies the above

design criteria. Kazdin (1982) offered the following introduction to multiple-baseline methodology:

' The effects are demonstrated by introducing the intervention to different baselines (e.g. behaviours or people) at different points in time. If each baseline changes when the intervention is introduced, the effects can be attributed to the intervention rather than to extraneous events.' (p.126).

For example, in a multiple-baseline across behaviours design, two or more independent behaviours are measured until stable baseline performance is obtained for each. At this point the intervention is introduced to the first behaviour only and data are still gathered on all behaviours. If the intervention is effective the first behaviour ought to show some change; the remaining behaviours, if they are independent of the first behaviour, ought to show a continuation of baseline rate. Although this would suggest that it was the intervention which had produced the change in the first behaviour, to confirm this the intervention would then be applied to the second behaviour. The second behaviour ought now to show a change to go with that in the first behaviour; again, any other behaviours should remain at baseline rate. This pattern is repeated with each of the behaviours.

The essential feature of a multiple-baseline design is to show that an intervention is effective by demonstrating that behaviour changes when it is applied. The different baselines serve as control conditions to evaluate what changes can be expected without the application of the treatment. In this way multiple-baseline designs check for the possible effects of extraneous variables. For example, a subject's behaviour might be influenced by a change in his or her life situation, or even the simple passage of time, yet one would not expect this to affect only one of the behaviours and at the exact point that the intervention was introduced (Kazdin, 1982, p.128). There are no hard and fast guidelines as to how many baselines to use. Obviously a minimum of two baselines is necessary and whilst in practice three or more are favoured it is possible to give a clear

demonstration of an effect with only two (e.g. Kandel, Ayllon & Rosenbaum, 1977).

3.6 Conclusions from the literature review

The three introductory chapters were aimed at presenting an introduction to some of the factors which influence the ways in which beliefs are formed, and the way these beliefs subsequently exert a potent influence on behaviour. Although particular types of belief held by the clinical population have been discussed in detail, the intention was not to set them apart from other beliefs: emphasis has also been given to the bias and error inherent in the way all people form and evaluate beliefs and hypotheses. Indeed, a theme running through chapters I and III has been the extent to which the beliefs held by particular clinical groups can be thought of as being alike the beliefs formed by the non-clinical population.

Certainly, in the case of delusions - the focus of the present research - there are good grounds, both theoretical and empirical, for viewing delusions as being on a continuum with normal functioning. What remains is to investigate more precisely the characteristic behaviour of people with delusions. The present empirical work, reported over the subsequent four chapters, marks an attempt at identifying some of these characteristics.

CHAPTER IV: Experiment 1

Introduction

In spite of the central role played by the notion of a cognitive deficit in a number of theories of 'schizophrenic' behaviour, the precise nature of the deficit or deficits is still unknown (Rund, 1988). No deficit has emerged which is common to all schizophrenics; moreover, an individual's cognitive performance may change over time. The performance of groups of schizophrenic subjects is also typically more varied than the performance of other matched groups (Leonhard, 1987). This would suggest that as a group they are less homogenous.

Typically experiments investigating possible cognitive deficits in people diagnosed as schizophrenic have employed designs which match schizophrenic and normal groups for performance on a control task and then compare them on an experimental task. That is, researchers typically look for a differential deficit. This is because schizophrenics will underperform as compared with normals on almost any task that requires a voluntary response (Chapman & Chapman, 1973a; 1973b). Therefore, the researcher hopes to show that the schizophrenic's performance is significantly worse on one type of task than on another; that is, that he or she has a differential deficit. However, such designs are fraught with difficulty. In the first instance they run the risk of statistical regression, a problem first identified by Francis Galton (1889). Although on almost any problem-solving task disturbed schizophrenics as a group perform less well than normals, the performance scores of the two groups do overlap. That is, the high scoring end of the schizophrenic group and the low scoring end of the normal group are comparable. Therefore, subjects matched on a particular task will be unrepresentative of their respective groups; if they are from the schizophrenic group they will be above average and if they are from the normal group they will be below average. Statistical regression states that subjects who deviate from the mean performance of their parent group on one task, will tend to score closer to the group mean on the second task. Now because normals

outperform schizophrenics, this means that the normals matched for their 'poor' performance on the control task will tend to perform better on the experimental task. The schizophrenics who performed unusually well on the control task will return to their mean group performance too, so they will tend to perform less well on the experimental task. Hence, on the experimental task the two groups will tend to yield highly disparate performances. The upshot of this is that the experimenter is duped into believing that there is a greater schizophrenic deficit on the experimental task than on the control task - that is, that he or she has demonstrated a differential deficit in the cognitive performance of schizophrenics.

Another potential source of error is matching groups of schizophrenic and normal subjects on current functioning IQ. Not only does this run the risk of statistical regression, but given that many schizophrenic's IQ is impaired, it means that schizophrenics of an equivalent functioning IQ to a group of normals would have higher premorbid IQ scores. For this reason, Chapman and Chapman (1973b) recommended matching subjects on premorbid functioning. Because most schizophrenics achieve a similar education to normal subjects of a similar social class, Chapman and Chapman recommended using number of years in education as a measure of premorbid functioning. Matching on premorbid functioning avoids the problem of unmatching on other variables. Also, because premorbid functioning and performance on the experimental task would not be compared directly, the danger of statistical regression is avoided.

There is a wealth of experimental data relating to the performance of schizophrenics on a whole host of problem-solving tasks. However, in addition to the methodological problems discussed above, the large degree of variability and change in diagnostic practices often renders generalization between studies difficult. This point relates to problems with the reliability of the concept of schizophrenia, discussed in Chapter II. Furthermore, the relevance of studies of 'schizophrenic' cognitive performance has been called into question by doubts cast over the validity of the concept of schizophrenia. Recently attention has been directed not at undifferentiated groups of schizophrenics, but at subgroups

sharing a common symptom (see Chapter II). Thus, a number of studies have compared the functioning of paranoid schizophrenics with various clinical, as well as non-clinical, controls.

The literature comparing paranoid schizophrenics with non-paranoid schizophrenics is divided: there is evidence both to support and to refute the contention that the paranoid's functioning is preserved better. Payne (1960, 1968) concluded on the basis of two reviews of the available literature that there was less intellectual deterioration in paranoid schizophrenics than in other types of schizophrenia. In contrast, Furth and Youniss (1969) found no significant differences between a group of paranoid and non-paranoid schizophrenics on a variety of non-verbal problem-solving tasks. In a particularly relevant study, Young and Jerome (1971) compared the performance of paranoid with undifferentiated schizophrenics on a series of problem-solving tasks. The authors reported that the paranoid's performance generally was poorer. Two specific differences were identified. First, the problem-solving behaviour of the paranoid subjects revealed a tendency towards forming atomistic models (i.e. rules directed towards the more concrete aspects of the problem). Second, the paranoids were more rigid in their thinking - that is, they appeared to be less sensitive to environmental cues which indicated that a change of problem-solving strategy was required. This second finding could be interpreted as reflecting a general tendency on the part of paranoid schizophrenics to adhere to a rule in the face of environmental change. That is, this finding might reflect a general rigidity of thinking, of which the adherence to paranoid ideas was only one instance.

Two features commonly included in the definition of a delusion are the bizarre content and the notorious resistance to change (see Chapter III). In attempting to account for the formation of delusions, one school of thought states that delusions are rational explanations, either for abnormal experiences (Maher, 1974) or for normal experiences (Nisbett & Valins, 1972). This argument is based on the finding that there is no evidence of illogical thinking in paranoid subjects (Williams, 1964). Maher and Ross (1984) described a number of case studies which support

the idea of the deluded individual as a 'good scientist'. This position is consistent with the notion of delusional thinking being on a continuum with normal functioning (Strauss, 1969: see Chapter III). In contrast to the view that the belief formation processes underpinning delusions are normal, a number of theorists have described a delusion as the product of faulty or abnormal reasoning (see Chapter III). This school of thought states that people with delusions have a cognitive deficit of some form. The notion of a cognitive deficit is at odds with the continuum view, because it proposes a difference in kind rather than degree. That is, delusions are seen as differing qualitatively from other beliefs. In seeking to account for the maintenance of delusions, Hemsley and Garety (1986) have argued that delusional beliefs may result from an inability to weigh up new evidence and adjust beliefs or rules accordingly. However, as the authors acknowledge, a failure to modify beliefs in the face of new or contradictory evidence is a charge which could equally well be levelled at the non-clinical population: it may be tautologous to state that strongly held beliefs are resistant to change. This stance is clearly in accordance with the continuum view.

From a behavioural perspective a delusion could be thought of as a core rule formed in response to a particular environmental history. Those subsequent behaviours which were guided and influenced by the delusion could then be seen as instances of rule governed behaviour (see Chapter I). An initial question to ask would be whether the verbal rule was an accurate description of the environment, or whether a delusion by definition represented a misconstrual of events. Thus, in behavioural terms, the debate as to whether a delusion was the product of rational or irrational thinking hinges on the extent to which a delusion was a rule which reflected the contingencies of reinforcement. The persistence of a delusion in the face of changing environmental circumstances could be thought as a case of 'behavioural rigidity', a familiar feature of the performance of normal subjects in human operant research (see Chapter I), whereby a rule survives because it proves insensitive to environmental change.

If a delusion did result, at least in part, from a cognitive deficit, the deficit ought to be in evidence in a variety of behaviours other than the delusion itself. Thus, if delusions are formed because certain individuals display abnormal reasoning, it might be expected that the abnormality would be evidenced in other beliefs or rules they formed. Separating the issue of formation from maintenance, a potential general deficit which might be implicated in the formation of delusions is an inability to form rules or verbalizations which reflect the environmental conditions. A potential general deficit which might be implicated in the maintenance of delusions is the inability to reject a rule in the face of environmental disconfirmation (cf. the study by Young & Jerome, 1971, described earlier). Thus, it might be the case that the rules or verbalizations formed by deluded people rarely bear a strong relation to the environmental contingencies: equally, it is possible that having formed rules of all types deluded people are particularly prone to behavioural rigidity. In both cases the bizarre content and fixity of a delusion would be only one instance of a more general phenomenon.

In order to assess these two possibilities empirically a problem-solving task was devised which analysed both the ability to form appropriate rules and subsequently to discard these rules in the face of disconfirmation. The Wisconsin Card Sorting Test (WCST) was developed originally by Berg (1948) to measure both the abstraction ability of normals and their ability to make a shift of set (i.e. to adopt a new problem-solving strategy in response to changed experimental conditions). Subsequently, the WCST gained popularity as a clinical neuropsychological instrument, because of its proven sensitivity to brain lesions of the frontal lobe (e.g. Robinson, Heaton, Lehman & Stilson, 1980). An advantage of the WCST is that it provides an objective measure not only of overall success, but also of particular sources of difficulty on the task. Thus, it is possible to see how many trials it takes the subject to discover the initial problem-solving rule. It is also possible to evaluate how quickly subjects are able to discard a rule once the experimental conditions supporting it change. In this sense the WCST measures both the ability to form a rule which reflects the

environmental conditions, and the ease with which the rule is discarded subsequently.

The WCST has been used to compare the performance of 22 young schizophrenics with 47 young normals (Fey, 1951): of the subjects diagnosed as schizophrenic, three were diagnosed paranoid sub-type. In total, subjects were required to make five category shifts. Six of the subjects diagnosed as schizophrenic completed the task, as opposed to 39 of the normal control subjects. The study revealed that the schizophrenic group achieved significantly fewer categories than the control subjects. The schizophrenic group also displayed more 'perseverative errors'; that is, they were more likely to adhere to a problem-solving rule even after responses based on it were no longer being reinforced by the experimenter. Unfortunately, Fey did not compare the speed with which the two groups were able to form the initial response category. Changes in diagnostic practice since 1951, together with changes in the administration of the WCST, render firm conclusions about Fey's study impossible. However, the study demonstrates how the WCST has been used to measure rule formation and maintenance in a general problem-solving situation.

In the present study the WCST was employed to assess the ease with which a group of ten individuals diagnosed as paranoid schizophrenic and manifesting clear delusional thinking (Group 1) was able both to form an appropriate problem-solving rule or category and subsequently to change the rule a number of times in the light of changing experimental conditions. Because the WCST has been standardized for a range of educational levels, the present study did not run a normal control group. A psychiatric control group (Group 2) was included, comprising of individuals diagnosed as schizophrenic who did not show any delusional thinking. Group 1 and Group 2 subjects were matched on premorbid level of education, as measured by the number of years schooling received. No assumptions were made as to the degree of homogeneity of these Group 2 subjects; they were included simply as an identifiable psychiatric control group. The comparison of particular interest was between the deluded

subjects and the normative data - that is, whether in keeping with a continuum view the performance of the deluded subjects would compare favourably with the performance of normal subjects of a similar educational background.

Method

Subjects.

Participation was on a voluntary basis and subject to the approval of each subject's key worker and psychiatrist. Group 1 consisted of 10 clients (8 male and 2 female) each of whom had held long-term delusional beliefs; these subjects satisfied DSM III criteria for paranoid schizophrenia as determined by case note data and present symptomatology. The mean age of Group 1 subjects was 39 years 6 months. Apart from delusions, three Group 1 subjects experienced auditory hallucinations; no Group 1 subject was thought disordered. Group 1 subjects had on average received 11.8 years of education: 8 subjects left school at 16 or under, one subject went on to do 'A' levels and one held a University degree. Group 2 consisted of 10 subjects who, on the basis of case notes and present symptomatology, satisfied DSM III criteria for schizophrenia in the absence of delusions. This group comprised of 6 males and 4 females. Four Group 2 subjects reported hearing auditory hallucinations. The average age of Group 2 subjects was 36 years 4 months. Group 2 subjects had on average received 11.4 years of schooling: 9 subjects left school at 16 or under, and one subject went on to University. All Group 1 and Group 2 clients were out patients either living in sheltered accommodation or attending a day hospital. Clients were interviewed on an individual basis in one of these settings.

Materials.

The WCST pack included: four stimulus cards, two identical decks of 64 response cards, and recording forms. All stimulus and response cards have systematic figure configurations, and are numbered to indicate the standard order. In this order, no two successive response cards have the same colour, form or number.

Procedure.

The WCST uses stimulus cards that display varying forms (crosses, circles, squares or triangles), colours (red, green, blue or yellow), and numbers (one, two, three or four). Four stimulus

cards with the following characteristics were placed in front of the subject: one red triangle, two green stars, three green crosses and four blue circles. The subject was then handed a deck of 64 response cards and instructed to place each consecutive card from the deck in front of one of the four stimulus cards, wherever he or she thought it ought to go. The subject was informed only whether each response was right or wrong; subjects were not told the correct sorting principle. Once the subject made ten sorts according to colour - the initial correct principle - without warning the criterion principle was changed from colour to form. Following ten sorts made according to form the criterion was changed again, this time to number. Following ten consecutive sorts according to number, the criterion was changed to colour once again and the cycle was repeated. The test proceeded in this manner until either the specified cycle (colour, form, number, colour, form, number) was completed successfully, or until all 128 response cards were used. Alternatively, the test was stopped if a subject either completed 64 trials (i.e. went through one entire deck of cards) without achieving the initial category, or subsequently completed 64 trials without achieving the particular category stage he or she was at in the sequence.

The subjects were given the following instructions:

' This test is a little unusual, because I am not allowed to tell you very much about how to do it. You will be asked to match each of the cards in these decks to one of four cards.

[Experimenter lays out the four stimulus cards in the standard order] You must always take the top card from the deck, and place it below the key card you think it matches. [Experimenter points to the stimulus cards] I can't tell you how to match the cards, but I will tell you each time whether you are right or wrong. If you are wrong, leave the card where you've placed it, and try to get the next card correct. Use this deck first [Experimenter hands the first deck to the subject, and places the second deck to the side] and then continue with the second deck. There is no time limit on this test.'

Subjects' responses were recorded on the forms provided. At the top of the form the experimenter marked off each category as the subject completed it (CFNCFN; C=colour, F=form, N=number). The recording form had 128 response items, each one "CFNO", O being 'other'. The experimenter recorded the subject's response by making a slash through those dimensions which were the same on the response and stimulus cards. Thus, for example, on those trials when the response card and stimulus card were identical, the experimenter put a slash through the C, F and N. When the response card had the same colour and number of figures as the stimulus card, the experimenter placed a slash through the C and N only. When the response card did not match the stimulus card on either colour, form or number, a slash was placed through the O.

Results

(a) Number of correct categories.

Table 5.1 shows the number of correct categories achieved by the Group 1 and Group 2 subjects. As is shown, seven of the Group 1 subjects completed all six categories: not one of the Group 2 subjects managed six categories. The mean number of categories completed by Group 1 subjects was 4.8, as opposed to a mean of 1.7 for group 2 subjects. A Wilcoxon matched pairs sign-test revealed this difference to be significant at the 1% level. That is, the ten deluded schizophrenic subjects achieved a significantly greater number of categories than the ten non-deluded schizophrenic subjects.

Table 5.1 Overall number of categories achieved by the deluded 'schizophrenics' (S1-S10) and the non-deluded 'schizophrenics' (S11-S20).

Group 1	Categories Achieved	Group 2	Categories Achieved
S1	6	S11	3
S2	1	S12	3
S3	6	S13	5
S4	3	S14	0
S5	6	S15	0
S6	6	S16	4
S7	2	S17	0
S8	6	S18	0
S9	6	S19	0
S10	6	S20	2
Mean	4.8 (1.7)		1.7 (1.95)

Note: Standard deviations appear in brackets after the means.

Normative data are available for the performances of 150 subjects on the WCST. These results, presented by Heaton (1981), represent the findings from the 123 normal controls in the study by Robinson et al. (1980) and 27 normal subjects run by Heaton. These subjects covered a range of educational and intellectual abilities. Heaton gave a break down of these normative data in terms of a number of variables, including IQ scores and number of years in education. For the present purposes, all comparisons with the normative scores are based on normal subjects grouped according to number of years of education. Heaton identified three groups of subjects on the basis of number of years of education. These were: those with less than 12 years of schooling (n=20), those with between 12 and 15 years of schooling (n=77) and those with more than 15 years of schooling (n=53). Table 5.2 presents a summary of those normative results used to make comparisons with the Group 1 and Group 2 subjects in the present study.

When comparing the Group 1 subjects to the normative data, it was necessary to consider the two Group 1 subjects (S3 and S8) with more than 12 years education separately: these two subjects were compared to the normative data from the highest educational group. The mean number of categories achieved by the eight Group 1 subjects with less than 12 years of education was 4.5 with a standard deviation of 2.1. It should be noted that five of these eight subjects achieved all six categories. Both S3 and S8 achieved all six categories. Thus, in terms of the number of categories achieved the performance of the Group 1 subjects is on a par with the normative data: the Group 2 subjects performance falls well below that predicted by the normative data.

Table 5.2. Selected results from the normative study of three educational groups: those with less than 12 years of education (<12), those with 12 to 15 years of schooling (12-15) and those with more than 15 years (>15).

	<12	12-15	>15
No. of categories	5.1 (1.4)	5.2 (1.5)	5.7 (1.0)
Trials to 1st Category	16.1 (9.3)	14 (13.8)	11.4 (1.6)
% perseverative errors	15.1 (7.8)	12.5 (7.4)	9.5 (5.6)

Note: Standard deviations appear in brackets after the means.

(b) Number of trials to completion of the first category.

Table 5.3 shows the number of trials each subject required to complete the first category - that is, the number of trials that elapsed before he or she recorded ten consecutive correct sorts according to colour. In the cases of five Group 2 subjects the test was terminated following 64 trials (i.e. one complete deck of cards) without ten consecutive correct sorts according to colour. For statistical purposes the comparison of Group 1 with Group 2 scores was based on these five subjects having taken 74 trials to complete the first category - the minimum number of trials required had the test been continued. (This provision cannot magnify the difference between Group 1 and Group 2 subjects, and in all likelihood provides a conservative estimate of the difference.) A Wilcoxon test revealed the difference between the two groups to be just short of significance at the 5% level. Thus, there was no significant difference between the number of trials the deluded and non-deluded subjects took to achieve the first category.

The normative data for the 20 subjects with less than 12 years education yielded a mean of 16.1 trials to complete the first category, with a standard deviation of 9.3. The mean number of trials taken by the eight Group 1 subjects of comparable educational status was 20 trials with a standard deviation of 10.3. The number of trials taken by the two Group 1 subjects in the top educational bracket was 14 and 11 respectively: the corresponding normative data yielded a mean of 11.4 trials to complete the first category with a standard deviation of 1.6. As was the case with the overall number of categories completed, the performance of the deluded subjects falls within the limits of the normative data, whereas the Group 2 subjects performed well below this level.

Table 5.4. Number of trials taken by Group 1 and Group 2 subjects to record ten correct sorts according to colour.

Group 1	Trials to 1st Category	Group 2	Trials to 1st Category
S1	12	S11	12
S2	30	S12	24
S3	14	S13	12
S4	32	S14	12
S5	11	S15	*
S6	11	S16	*
S7	34	S17	41
S8	11	S18	*
S9	11	S19	*
S10	19	S20	*

An asterisk indicates that the test was terminated following 64 trials without the subject achieving the first category.

(c) Number of perseverative responses and perseverative errors.

Table 5.5 shows the percentage number of responses made by each subject that were perseverative (% PR) and the percentage number of these perseverative responses that were errors (% PE). These scores were calculated by dividing the total number of trials by the number of perseverative responses and perseverative errors respectively. Percentage scores were used in preference to raw scores to control for the different number of trials the subjects received. A Wilcoxon two tailed test yielded a significant difference at the 0.02 level of significance, confirming that the group of deluded subjects made significantly fewer perseverative responses than the non-deluded group. A Wilcoxon two tailed test on the percentage number of perseverative errors made by Group 1 and Group 2 subjects was significant at the 5% level. That is, the ten subjects diagnosed as schizophrenic in the presence of delusions made significantly fewer perseverative errors than the ten subjects diagnosed as schizophrenic in the absence of delusions.

Table 5.5. Percentage of perseverative responses (PR) and perseverative errors (PE) for the deluded (S1-S10) and non-deluded (S11-S20) schizophrenics.

Group 1	% PR	% PE	Group 2	% PR	% PE
S 1	32	26	S 11	69	53
S 2	38	26	S 12	41	34
S 3	17	12	S 13	14	12
S 4	21	16	S 14	27	24
S 5	12	11	S 15	89	67
S 6	18	14	S 16	55	45
S 7	39	33	S 17	28	22
S 8	9	8	S 18	95	70
S 9	15	9	S 19	25	16
S 10	17	16	S 20	87	66
Mean	21.8	17.1		53	40.9
Standard deviation	10.67	8.4		30.23	22.28

Although the normative data for the WCST provided both the raw and percentage number of perseverative errors, only the raw number of perseverative responses is provided. This is unfortunate, because raw number of perseverative responses does not control for the inter-subject variability in terms of the overall number of trials. Thus, only percentage perseverative error scores will be considered. In Table 5.2 the mean number of percentage perseverative errors for the 20 normal subjects in the lowest educational bracket was 15.1 with a standard deviation of 7.8: the mean number of perseverative responses for the top educational bracket was 9.5 with a standard deviation of 5.6. The mean number of percentage errors for the eight Group 1 subjects of low educational status was 18.88; S3 and S8 recorded mean percentage perseverative error scores of 12 and eight respectively. The mean perseverative error score for the nine Group 2 subjects of low educational status was 44.1; S3 recorded a mean perseverative error score of 12. Thus, only the performance of the Group 1 subjects was consistent with the normative data; the Group 2 data was far outside the range of scores for the normal control group.

(d) Verbal reports.

Having completed the test each subject was asked what they thought had been going on and what he or she had been trying to do. The examiner made no mention of colour, form or shape, and number; nor was any mention made of category switching or changing. Table 5.6 describes which, if any, of the three categories the subject identified and whether the subject made any mention of switching or changing the category. These verbal reports serve to reinforce the impression created by the statistical analyses - that overall the ten deluded schizophrenics' performance was more sensitive to the task conditions than the performance of the non-deluded schizophrenics.

Table 5.6. *Subjects post-experiental verbal reports.*

Group 1	Group 2
<p>S1: mentioned colours, shapes and numbers. Changed when he 'started getting them wrong'.</p> <p>S2: 'trying to sort out colours, shapes and counting'. No mention category change.</p> <p>S3: mentioned colour, shapes and numbers. 'you were changing the pattern'.</p> <p>S4: mentioned colour and number. No mention of shape or category change.</p> <p>S5: 'When you were telling me I was wrong I wasn't really wrong but you were changing it from colours, shapes and numbers'.</p> <p>S6: mentioned colour, shape and number, and category changes.</p> <p>S7: mentioned colour and shape. No mention of number or of category changes.</p> <p>S8: mentioned switching different categories.</p> <p>S9: mentioned colour, shape and number, and category changes.</p> <p>S10: mentioned colour and shape. Mentioned change 'after so many of each'.</p>	<p>S11: mentioned colour and shape. No mention of change or number.</p> <p>S12: colour, shape and number, but not change.</p> <p>S13: mentioned colour, shape and number, and changing category.</p> <p>S14: mentioned colour, shape and number. 'When I was getting to a certain stage you were changing them.'</p> <p>S15: mentioned shape only.</p> <p>S16: 'I didn't know whether it went by colour or counting'</p> <p>S17: mentioned colour, shape and number, and order of category change.</p> <p>S18: matching on shape only.</p> <p>S19: mentioned number only.</p> <p>S20: matching on shape.</p>

Discussion

The most immediate conclusion to be drawn from the present study is that the subjects diagnosed as schizophrenic and showing delusions outperformed the non-deluded schizophrenics significantly on almost every measure. This difference was reflected in the clients' verbal reports made at the end of the test. The only exception to this rule was the number of trials to completion of the first category, where the difference fell just short of statistical significance.

However, these results should be interpreted with caution. The observed differences in problem-solving performance between the Group 1 and Group 2 subjects are open to a number of different interpretations. If matching on level of education is a good measure of premorbid ability, then on the basis of the present study it would seem that in paranoid schizophrenics those aspects of problem-solving behaviour measured in the present study are preserved better. This conclusion is consistent with the view advanced in the introduction, that cognitive functioning in paranoid schizophrenics is preserved better than in the other subtypes of schizophrenia (e.g. Payne, 1968). Alternatively, it may be that years in education is not a good measure of premorbid ability and that the differences observed in the present study would have been observed before the onset of the 'illness'. Another possible interpretation of these present findings is that the Group 2 performance scores reflected the presence of thought disordered subjects. However, the case notes for only one of the Group 2 subjects made a clear reference to thought disorder. A more fundamental reservation about the present study concerned the use of a group of undifferentiated schizophrenics. The major problems with the validity of the concept of schizophrenia discussed in Chapter II dictate that any comparison involving an undifferentiated group of people diagnosed as schizophrenic be interpreted cautiously. Indeed, the large standard deviations observed in the scores of the Group 2 subjects as compared with the Group 1 subjects lend support to the contention that undifferentiated groups of schizophrenics are of questionable homogeneity - although, conversely, the degree of homogeneity in the performances of the

deluded subjects offers support for the single symptom approach to psychosis.

However, the real purpose of the present study was not to learn something of the functioning of non-deluded schizophrenics, but rather to learn something of the characteristic behaviour of people with delusions as compared with other psychiatric and normal individuals. In this respect the psychiatric control group was useful: Group 2 subjects constituted a clinical control group who did not show delusional thinking. The normative data were considered for the same reason; to shed further light upon particular behaviours of people with clear delusional beliefs. In particular two aspects of the functioning of the deluded subjects were under scrutiny. These were: the ability to both form rules which were in touch with the environmental contingencies and to abandon these rules in the light of changing environmental conditions. The deluded subjects proved as able as the normal controls in discovering the particular problem-solving rules, and in changing these rules in response to new experimental conditions. This claim is based not only on the overall means and standard deviations reported earlier, but also on the fact that the full range of normative scores was sufficiently diverse to incorporate all the deluded subjects. For instance, although rare, some normals made more than 46 perseverative responses on the WCST (Heaton, 1981): S7, with 50 perseverative responses, was the only Group 1 subject to record more than 46 perseverative responses. The comparability of the deluded and normal subjects' performance suggests that people with delusions do not have general deficits in those aspects of belief formation and maintenance measured by the WCST. In other words, it would appear that delusions do not result from an inability to form rules which reflect the environmental conditions. Equally, the maintenance of delusions would appear not to result from an inability to abandon rules of any description in the face of a changing environment.

In summary, the deluded subjects formed problem-solving rules as competently as normal subjects of comparative schooling, and with far more ease than a non-deluded psychiatric control group. The same finding applies to the ease with which the deluded subjects were able to abandon these rules in the light of changing experimental feedback. These data are in accordance with the view of delusional functioning as being on a continuum with normal behaviour: they are also consistent with the view, put forward by Maher, that there are common processes underlying the formation and maintenance of deluded and non-deluded beliefs alike. Clearly, the present study does not warrant the conclusion that delusions do not reflect an underlying cognitive deficit. However, the study does provide evidence against the existence of one possible deficit, and in so doing it contributes to the body of empirical support for the continuum view. Moreover, establishing that people with delusions are able to form and subsequently to abandon at least some rules was a first step toward the subsequent examination of delusions themselves. If delusions prove resistant to a belief modification package, for example, it might be argued that this reflected a general unwillingness on the part of deluded individuals to modify their verbal rules. Given the present findings this seems unlikely. Having covered for this possible objection, the stage is now set for the subsequent three chapters in which the measurement and modification of delusional beliefs is investigated.

CHAPTER V

THE MEASUREMENT AND MODIFICATION OF DELUSIONAL BELIEFS: EXPERIMENT 2(a) AND 2(b).

General Introduction.

The following introduction refers back to those studies discussed earlier which particularly influenced the approach towards the measurement and modification of delusions adopted in the present research.

Although some recurrent themes have emerged from attempts to define a delusional belief, it has not proved possible to tie down the individual criteria. There is reason to suppose that there are common processes involved in the formation and maintenance of delusional and normal beliefs alike: thus, for example, there appears to be little out of the ordinary in "normal" people disregarding information at odds with their strongly held beliefs (Hemsley & Garety, 1986). This is consistent with the approach to defining and measuring delusional beliefs reported by Strauss (1969, discussed in Chapter III). Strauss proposed that delusions should be thought of as points on a continuum with normal functioning, position on this continuum being determined by dimensions such as the client's degree of belief conviction and the amount of time spent preoccupied with the belief. There has thus been a shift of emphasis away from defining a delusion according to whether conviction was absolute, or the belief unmodifiable, etc., towards determining for a given individual the degree of belief conviction, the extent to which the belief is modifiable, and so on. Preliminary support for a multidimensional view of delusions was provided by Kendler et al. (1983). Further support came from Garety (1985), and Brett-Jones et al. (1987),

who pioneered a reliable methodology for measuring over time different aspects of delusional thought, and found no consistent pattern of change among the different dimensions (see Chapter III).

One of the first reported studies in which an attempt was made to modify a delusion (see Chapter III) was a case study by Shapiro and Ravenette (1959). Their procedure had three aims: (i) to show the palpable falseness of the belief through guided discussion; (ii) to demonstrate that holding the belief was a sign of illness; and (iii) to show how people might come to have such an illness. Watts et al. (1973) argued that a very real danger with any belief modification package would be what Brehm (1966) called 'psychological reactance', where too direct an approach might serve simply to reinforce the belief: a subsequent study by Milton et al. (1978) offered empirical support for this contention. Watts et al. drew up four guiding principles designed to keep reactance to a minimum. They recommended: firstly, that the modification begin with those beliefs which are the least strongly held; secondly, that clients be asked only to consider an alternative to their belief, rather than being specifically requested to adopt the alternative; thirdly, that the evidence for the belief be challenged, as opposed to the belief itself; and, finally, that the client be encouraged to voice the arguments against his or her belief. Applying these guidelines, Watts et al. were able to report a substantial reduction in belief conviction in each of their three subjects.

One shortcoming common in the modification literature is a lack of 'baseline' data. Even if the belief to be modified has been present for a number of years, baseline data are still required because it is important to establish prior to any intervention how the delusional thinking and other relevant behavioural indices vary over time. Only then can changes following an intervention be weighed against any previous baseline variability. Multiple-baseline methodology (Kazdin, 1982) is therefore appropriate for research of this kind, and was employed in the present experiments. Another feature of previous studies is that interventions have not always been systematically evaluated;

often a number of diverse and undifferentiated techniques have been employed. By way of component analysis, the present studies employed a clearly specified structured verbal challenge. Assessment of the maintenance of behaviour change following the introduction of an intervention, an issue which again has all too often been neglected, was addressed in the present study by conducting follow-up meetings after one month, three months and six months.

In accordance with the continuum view of delusions, and in deference to the growing dissatisfaction with the concept of schizophrenia (see Bentall et al., 1988, discussed in Chapter II), a feature of the present research was that clients were not told that their belief was a sign of illness. Rather, the beliefs were interpreted as having developed in reaction to, and as a way of making sense of, specific experiences the clients had encountered. As in all the modification studies reviewed, degree of belief conviction was used as the major measure of recovery from delusional thinking. However, in keeping with a multidimensional view of delusions, several secondary measures of change were also included.

Two single case studies are reported in the present chapter, each of which employed a multiple-baseline design across three delusional beliefs - that is, each client held three delusions which were challenged separately. In each study the intervention was introduced to the three beliefs at four week intervals following a minimum of five weeks of baseline. The two experiments reported in the present chapter thus provide a detailed picture of the nature of delusional thinking before, during and after an intervention designed to modify the beliefs.

General Method

Procedure*

Sessions lasting approximately one hour each were conducted once a week throughout the study. All the arguments put forward when challenging the beliefs were constructed solely by the author.

Phase 1. Preliminary Interviewing

Two interviews were conducted with each client and these served the dual function of defining the belief to be modified and of establishing rapport.

Phase 2: Baseline.

Throughout this phase as much relevant data as possible on the nature of the belief was collected, with special interest being paid to the evidence, both past and present, which had helped to establish and maintain the belief. During the final baseline session clients were presented with each piece of evidence they had cited for their beliefs and asked to rank them in order of importance to the belief system. At no point during the baseline phase was the client's belief or reasoning challenged in any way.

Phase 3: Verbal challenge.

Throughout the intervention the client was encouraged to view a deluded belief as being only one possible interpretation of events. The clients were not told that their interpretation was wrong, but simply that there was an alternative and they were asked to consider critically the two accounts. Initially, following Watts et al. (1973), the evidence for the belief was challenged in inverse order of importance. In each case the researcher argued for a non-deluded interpretation of events against the client's delusional explanation. An integral part of this discussion involved making clear to the client the way beliefs can exert a strong influence over the interpretations placed on events - that is, the client was made aware of the regulatory function of language.

* A manual providing a fuller description of the modification procedure is available from the Department of Psychology, University College of North Wales, Bangor.

Once all the evidence had been dealt with, the discussion was moved on to challenge the belief itself. Again, the stance was non-confrontational. Challenging the belief was carried out in three stages, although in practice they overlapped. First, any inconsistency and irrationality within the client's belief system was pointed out; this was tantamount to posing the question "Would it make sense for things to be as you say they are?" This done, it was then shown that there was a viable alternative explanation for what had been happening to the client, namely, that the belief had come about in response to a particular set of events the client had experienced. Finally, it was argued that the researcher's account was the better explanation of the client's experiences.

Phase 4: Follow-Up.

To assess for maintenance of behaviour change, 1 month, 3 month and 6 month follow-up meetings were conducted. At these sessions all the measures were administered (with the exception of RTHC) in the order and manner described earlier.

Measures.

Following Brett-Jones et al. degree of belief conviction and degree of belief preoccupation were measured using a modification of Shapiro's (1961) Personal Questionnaire (PQ) technique, described by Phillips (1977) as the Ordinal Personal Questionnaire (see Chapter III). This technique was also employed to measure the degree of anxiety experienced by the subject whilst thinking about his or her belief. The PQ is a means of measuring changes in symptom intensity specific to an individual subject and, in its modified form, was first employed to measure delusions by Garety (1985). A PQ comprises a construction stage and an administration stage. Construction entails coming to an agreement with the client as to the wording for the expression of differing levels of symptom intensity. In the present research, each client was offered five statements of intensity of belief conviction, preoccupation and anxiety, respectively, and in each

case the client accepted these statements as valid descriptions. Table 5.1 details the specific wording used for each client and shows that, whilst the conviction measure was concerned with how certain the client was feeling at that particular point in time, the preoccupation and anxiety statements referred to the level of symptom intensity experienced over the preceding week. The five statements for each measure were written on separate pieces of card and ranked by the client. At the administration stage each card was presented randomly, and the client was required to say whether the intensity was more or less than was stated on the card. For instance, in the case of belief conviction, when faced with the card 'Almost definitely true', the client was required to say whether his or her degree of belief certainty was more (i.e. he or she was definitely sure of the belief) or less (i.e. he or she felt less than almost certain of the belief). The score on each occasion was provided by the number of cards to which the client replied that the symptom intensity was greater than that stated on the card. The resulting six point ordinal scale allowed for comparisons to be made for each subject across time.

Following Hole et al. (1979), degree of conviction was also measured by asking for a percentage rating of conviction, and this was taken after the conviction score. Both measures of belief conviction, and the PQ measures of preoccupation and anxiety were administered at the close of every session throughout the entire study.

Again, in keeping with Brett-Jones et al., accommodation and reaction to hypothetical contradiction (RTHC) were assessed. The accommodation measure was concerned with the awareness that the client demonstrated of actual occurrences that were contradictory to his or her belief, and how these had affected the belief. Accommodation was measured at the start of every session by asking the client whether anything had happened over the past week to alter his or her belief in any way. RTHC was measured following accommodation at weeks two and four of baseline to evaluate the client's potential for accommodation of evidence at odds with his or her belief. A plausible but contradictory occurrence was posed to the client and he or she

was asked how, if at all, this would change the belief. Examples of accommodation and RTHC are given in Table 5.1.

Table 5.1. Examples of the different measures and when they were administered.

Accommodation. Administered at the start of every session throughout the study: e.g. 'Has anything happened over the last week to alter your belief that you can communicate with people in the past and change the course of history?'

Reaction to hypothetical contradiction (RTHC). Following accommodation at week 2 and 4 of baseline: e.g. 'Would it alter your belief in any way if you were given the chance to try to change history and it did not work?'

Beck Depression Inventory (B.D.I.) & Symptom Checklist. Administered prior to the PQ measures at the final baseline session, the final intervention session, and at each follow-up.

PQ Measure of Conviction, Preoccupation and Anxiety. Administered at the close of every session throughout the study.

	<i>Conviction</i>	<i>Preoccupation</i>	<i>Anxiety</i>
0	My belief is almost definitely false	Over the last week I thought about my belief once	Thinking about belief I get very slightly anxious
1	...probably false	...3 times	...slightly anxious
2	...May or may not be true	...Once a day	...fairly anxious
3	...probably true	...4 times a day	...very anxious
4	...Almost definitely true	...Once an hour	... extremely anxious
5			

N.B. PQ scores fall between two verbal descriptions; one might respond more to probably true but less to almost definitely true.

Percentage Conviction. Following the PQ conviction measure, clients were asked to give their degree of belief conviction in percentage terms.

Given that little is known about the potential effects on other behaviour of the loss, or partial loss, of a delusion, it seemed desirable to cover at least some of the possible clinical ramifications. This was done in two ways. First, the Beck Depression Inventory (BDI) was administered (Beck, 1967). Also, selected items from Wing's Present State Examination (Wing, Cooper & Sartorius 1974) were combined to form a short Symptom Checklist, which covered the various forms of schizophrenic delusions and hallucinations. The Symptom Checklist is shown in Table 5.2. It should be emphasised that the Symptom Checklist was not employed in any diagnostic capacity, but solely for descriptive purposes. The symptom checklist was conceived as an additional measure of change, with the emphasis placed on whether responses to particular questions changed over the course of the study. For all subjects the BDI and Symptom Checklist were administered at the final baseline session (i.e. the final session prior to the introduction of the intervention), the final session of the intervention phase, and at each follow-up. In Experiments 2(a) and 2(b), where three beliefs were challenged per client, these measures were administered prior to the introduction of the intervention to each of the three beliefs challenged. Thus, in these two studies, the BDI and Symptom Checklist were also given at weeks 9 and 14.

Table 5.2. *The symptom Checklist*

1. Can you think quite clearly or is there any interference with your thoughts? Can people read your mind? Is anything like telepathy going on? yes/no Specify:
2. Do you ever hear noises or voices when there is no one about and nothing else to explain it? Does it sound like muttering or whispering? Can you make out the words? yes/no Specify:
3. Have you ever had visions or seen things which other people couldn't see? yes/no Specify:
4. Do you sometimes notice strange smells which other people don't notice? yes/no Specify:
5. Do you feel under the control of some force or power other than yourself? yes/no Specify:
6. Is anyone deliberately trying to harm you? Is there any other kind of persecution? yes/no Specify:
7. Do you have any special abilities or powers? yes/no Specify.
8. Are you a very prominent person? yes/no Specify.
9. Are you a very religious person? Are you specially close to Christ or God? Can God communicate with you? yes/no Specify:
10. Have you had any unusual experience or adventures recently? yes/no Specify:
11. Do you think your appearance is normal? yes/no Specify.
12. Have you ever felt that something was the matter with your head or with your brain? yes/no Specify:
13. Do you feel that you have committed a crime, or sinned greatly or deserve to be punished? Have you felt that your presence may contaminate or ruin other people? yes/no
Specify:
14. Do you have any reason to be jealous of anybody? yes/no
Specify:

EXPERIMENT 2(a)

Unless stated otherwise, all details are as for the general method.

Subject BP : date of birth 4-4-58.

In 1982 BP withdrew markedly from friends and family and displayed grossly deluded ideation. This led to his being admitted to hospital in 1983, where after what the case notes describe as 'long and careful consideration' he was given the diagnosis of paranoid schizophrenia (DSM III). At this time BP presented with delusions of thought insertion, thought broadcasting, reference, grandeur and influence. There had been three subsequent admissions, the last being some eight months prior to the onset of the current study. At the time of the study BP was single and unemployed and had been on a stable drug regime for the past six months. BP reported three distinct delusional beliefs, which he stated having held for between two and four years (in the case of each belief the case notes supported this claim). These beliefs were:

Belief 1. That a girl called Amanda, whom BP had not been in contact with for many years, was reading his mind and influencing his life by controlling some of the things that happened to him.

BP believed that Amanda was doing these things because she and BP were to be married 'when the time was right', until when it was her task to ensure that he did not forget her. Thus, BP believed that Amanda sent him constant reminders. For example, BP reported experiencing a pulsating feeling in his temple frequently, which he took to be caused by Amanda reading his mind. On these occasions, as well as the pulsating BP often experienced the smell of a 'female scent', which he believed to be Amanda's: BP took this to be Amanda's way of letting him know that it was she who was reading his thoughts and thinking of him. Another typical reminder occurred at a time when BP was developing an interest in another woman. BP chanced to buy a

record which contained a song entitled 'Amanda' - BP interpreted this coincidence to be evidence that Amanda was aware of his new-found interest and was reminding him that he was meant for her. BP reported forming his belief about Amanda in 1983 following his discharge from hospital. He stated having held a similar belief once before about a different girl: however, he felt that this girl had caused his breakdown and had not been the right one for him.

Belief 2. That he had been Jesus Christ in a prior life.

This belief was the most recent of the three, being formed when BP was in hospital over the Easter weekend in 1985. At this time BP reported becoming aware of similarities between his life and the life of Jesus. For instance, he felt that he too was being crucified, and that both he and Jesus were having their minds read by millions of people. Another parallel concerned BP's belief that Jesus was a schizophrenic. This notion stemmed from BP's observation that Jesus' claims to having performed miracles were akin to the claims made commonly by 'schizophrenics'. BP reported that since 1985 there had been numerous occurrences which had reinforced his belief. A typical example took place at a church service BP attended, where at the end of his sermon the vicar said that he had sensed the presence of Jesus in the church.

Belief 3. That BP had been Leonardo de Vinci in a prior life.

BP reported forming this belief in 1983. Evidence for the belief was varied. On the one hand BP believed that information from Leonardo's mind was seeping through into his own consciousness. Thus, for example, he (i) had pictures of designs for helicopters, rockets and submarines imprinted on his mind, and (ii) claimed to be privy to secret knowledge about Leonardo, such as his having invented an elixir of life. On the other hand, BP claimed that both he and Leonardo had experienced phases of creative genius, during which they had determined the course of history for the coming thousand years. BP believed that Leonardo had been able to see into the future and that this explained how Leonardo was

able to draw designs for things, such as helicopters, that had yet to be built. BP believed that Leonardo and the Mona Lisa had looked into the future and seen BP in his own phase of creativity and that this explained the infamous smile.

Procedure

In order to clarify the nature of the first stage of the verbal challenge, there follows a description of the alternative interpretation the experimenter put forward to account for the piece of evidence BP rated as most important to his belief that he had been Leonardo in a prior life. This evidence was that BP had pictures of Leonardo's designs for helicopters and space ships imprinted on his mind. BP interpreted this in the following way. He believed that all the experiences people had in their prior lives were retained in what he called their 'subconscious'. BP believed, therefore, that Leonardo's designs had been present in his own subconscious, from where they had filtered through to imprint themselves on his conscious mind. As such, BP took the designs to be conclusive proof that he had been Leonardo in a prior life. Without being requested to do so, BP drew these designs. The counter argument put forward by the experimenter was based on BP's drawings. First, the experimenter pointed out that whereas BP's drawing of a helicopter included a contemporary rotary propellor, Leonardo's sketches showed an entirely different screw shaped propellor, demonstrating clearly that BP's drawings were not Leonardo's. Second, the nature of Leonardo's screw shaped propellor, which was far less efficient than the modern rotary type, showed clearly that Leonardo had not been able to see into the future.

A second piece of evidence, this time for BP's Amanda belief, is reported in order to illustrate how the experimenter made clear to BP the way in which beliefs could influence subsequent behaviour. BP reported one occasion when a dishevelled, scruffy looking girl came up to him at a bus stop and asked him for some money. Although at the time BP did not recognize the girl, he later 'realized' that the girl had in fact been Amanda who had planned the meeting in order to remind him that she was still waiting for

him. The experimenter described to BP the way in which beliefs led people to interpret events in particular ways, and suggested that BP's core belief about Amanda had led him to interpret the encounter as he did. The experimenter emphasised that there was nothing in the situation itself to justify BP's interpretation.

Having discussed the evidence for each belief, the second stage of the verbal challenge involved challenging the belief itself. Details follow of the verbal challenge put forward to combat BP's belief that he was Jesus in a prior life. (When discussing BP's beliefs that he had been both Jesus and Leonardo the experimenter stressed that it was not BP's belief in reincarnation per se which was under scrutiny, but his conviction that he knew who he had been in his prior lives.)

Two examples are given of inconsistency and irrationality inherent within BP's belief that he had been Jesus in a prior life. First, BP argued that whilst in hospital over the Easter period he felt that he was having his mind read by 'millions of people' and he claimed that a similar thing had been experienced by Jesus. In support of his claim BP pointed to Jesus' foreknowledge of both his subsequent betrayal by Judas and his being denied three times by Peter. The experimenter pointed out to BP that, if anything, these instances suggested that far from having his own mind read by others Jesus was in fact reading the minds of others, or at the least was foretelling the future: they certainly did not suggest that he was having his mind read by 'millions of people'. A second instance of irrationality concerned BP's belief that Jesus was a schizophrenic. BP's contention was that Jesus' claims to have performed miracles were akin to the claims made by those schizophrenics BP had come across in hospital. The experimenter argued, however, that a key element in the New Testament miracle stories was that there were witnesses. As such, the biblical miracle stories differed qualitatively from an unsupported claim to have performed similar deeds.

The essential feature of the alternative interpretation put forward by the experimenter to account for BP's 'Jesus' belief, was that the belief arose in response to and as a way of making sense

of BP's experiences leading up to and during his stay in hospital over the Easter weekend in 1985. BP described these experiences, which included feeling that his 'head was on fire', as 'like being crucified'. The experimenter suggested that the experience of being crucified, together with the other similarities BP observed between his own life and the life of Jesus, led BP to form his belief that he had been Jesus. In support of this alternative interpretation of BP's belief, the experimenter drew attention to particular manipulations BP made to his Jesus belief in order for it to be compatible with his other beliefs. For example, initially BP stated that Jesus developed schizophrenia because his 'mind became tired'; BP believed that Jesus lost his mind completely by the time of his crucifixion. BP used the notion of minds becoming tired to explain why he himself was a 'schizophrenic' - that is, because he and Jesus were one and the same person. In effect, BP argued that he was born with a tired mind and that this explained his subsequent breakdowns. However, this presented BP with something of a dilemma because he did not believe that Leonardo had a tired mind; on the contrary, BP believed that Leonardo had a great mind. Therefore, BP changed his position. Having stated that minds became tired over time, BP introduced the idea that they could also recover over time. Hence, he argued, the mind recovered in between the lives of Jesus and Leonardo, and subsequently tired again in between the lives of Leonardo and BP. (This particular argument was put forward by the experimenter on the basis of comments made by BP during the baseline phase: clearly BP himself did not report his change in opinion in these terms.)

The experimenter suggested that in allowing BP to make sense of his experiences in hospital over the Easter weekend, BP's belief could be seen as functional. Furthermore, the experimenter suggested that the belief might also be seen as functional in that it explained why BP was 'schizophrenic'. BP reported that when first admitted to hospital although he was told that he was a schizophrenic, no attempt was made to explain to him what this meant. It should be emphasised that the experimenter did not tell BP that he was a schizophrenic; rather the experimenter suggested that BP's need to understand why he was a schizophrenic may

have contributed to his forming the belief that he had been Jesus. The experimenter raised this possibility with BP by observing that his belief that he had been Leonardo pre-dated his belief that he had been Jesus by some two years, and by asking the question of what the latter reincarnation belief added. In answer to this question the experimenter suggested that, among other things, the Jesus belief offered BP a way of understanding why he was 'ill'; neither BP's Leonardo belief nor his Amanda belief addressed this issue. Thus, the experimenter argued that BP's belief that he been Jesus could be seen as both a reaction to and a way of making sense of his experiences over the Easter weekend of 1985.

In support of the alternative explanation the experimenter pointed out that the notion of Jesus having returned at least twice went against traditional Christian teaching. The idea of the Second Coming was a key one in Christian thought and was at odds with BP's belief that Jesus already had returned at least twice. Moreover, the experimenter suggested that BP's belief that in one of these subsequent lives Jesus had designed submarines, guns and rockets, might also raise a few Christian eyebrows. The experimenter also questioned why BP should remember a good deal about his life as Leonardo and yet nothing about his life as Jesus. The experimenter reminded BP of his report of having, in 1983, met and believed a man in hospital who claimed to be Jesus.

Phase 5: Independent Assessment.

After the final follow-up, an independent clinical psychologist interviewed BP to assess his degree conviction in each of his delusional beliefs at that point in time and to obtain his observations on the study.

Results

(a) Delusional Dimensions.

Degree of belief conviction was the major measure of recovery from delusional thinking. Figure 5.1 shows BP's degree of percentage belief conviction in his three beliefs during each phase of the study. Percentage belief conviction and PQ conviction score correlated very closely (a Pearson's r of .98) so the PQ score is not presented separately. Belief conviction in all three beliefs was very stable during the first five weeks of the study. At week 6 the verbal challenge was introduced in the case of BP'S first belief ('Amanda'); there was an instant drop in degree of conviction in belief 1 to only 50% certainty. Over the next three sessions of verbal challenge conviction in Belief 1 fell further to only 10% sure. Degree of conviction in Belief 2 ('Jesus') and belief 3 ('Leonardo') remained at the baseline level of 100% until week 10 of the study, when belief 2 was challenged. Following two sessions of verbal challenge with Belief 1, BP reported having 'reality-tested' his belief about Amanda. He once told one of his friends about his belief that Amanda was reading his mind and influencing his life, and the friend had 'seemed to understand'. BP interpreted his friend's understanding as further evidence that the belief was true. During the verbal challenge BP asked the friend, whom he saw frequently, whether in fact he had understood and believed what BP told him. The friend said that he remembered the conversation well but had neither fully understood nor believed what BP had said. Discussion of belief 1 was continued throughout the intervention phase; this belief was rejected totally at weeks 12, 13, 15, 16, 17, 18 and 20.

At week 10 the verbal challenge was introduced in the case of the second belief, producing an immediate fall in conviction to only 70% certain and prompting BP to say 'I do feel a bit separated from the fact that I was Jesus'. There was no change in conviction in Belief 3. However, at week 11, conviction in Belief 3 fell to 80% certain and conviction in Belief 2 rose slightly, also to 80% certain. At the next session conviction in Belief 2 fell again, to only 50% certain; conviction in Belief 3 rose slightly to 90%. At

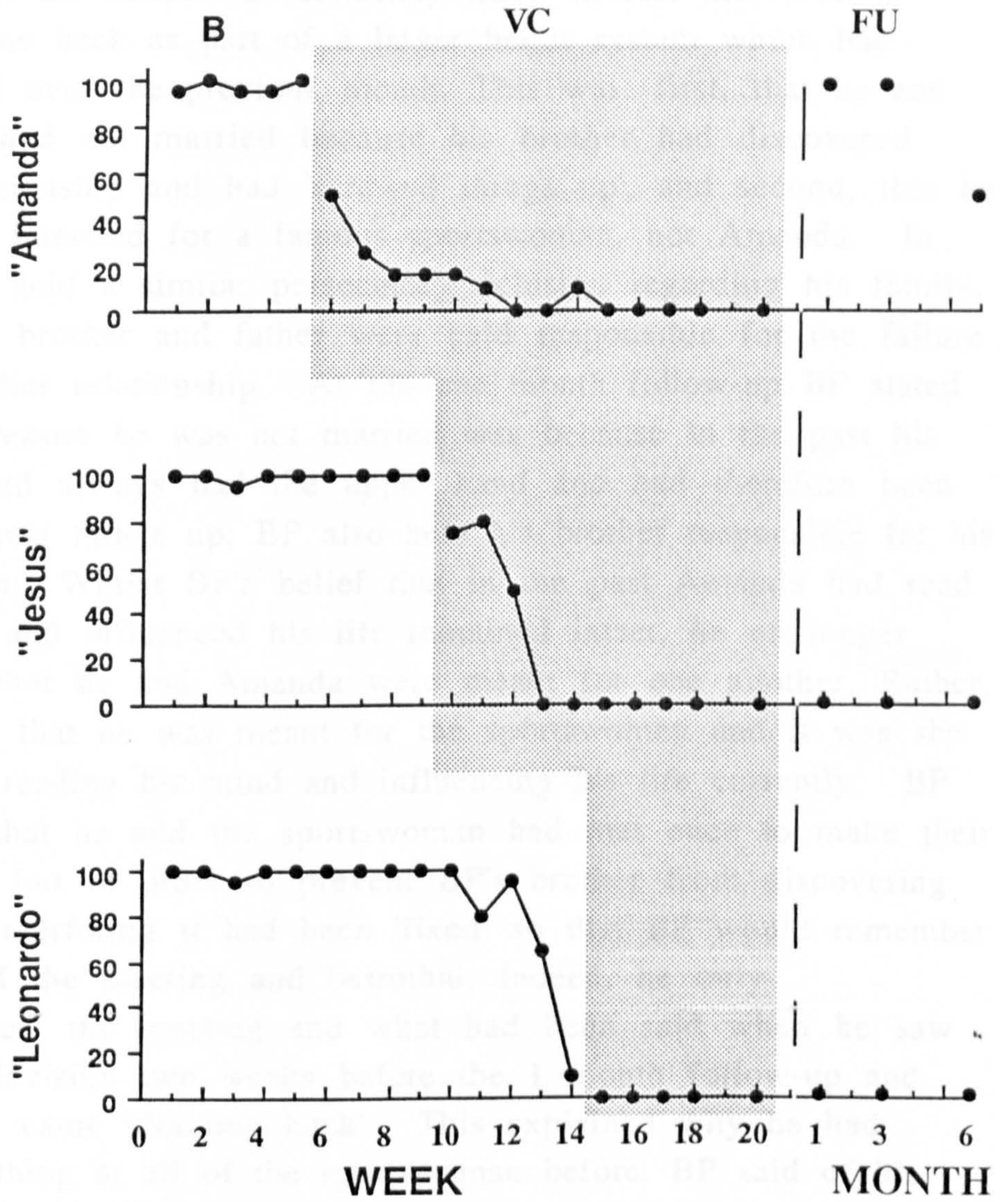
week 13, the fourth at which Belief 2 was challenged, Belief 2 was rejected totally. Of his belief that he had been Jesus, BP said 'I was believing things that I'd wanted to believe and not things that were true'. BP also displayed an insight into the interpretation of his belief as an explanation for his experiences in hospital over Easter, saying 'I was ill and I was looking for a reason why I was ill...I was just thinking, if I'd been ill over Christmas I'd probably have believed I was Santa Claus'. At week 13 there was also a substantial drop in degree of conviction in belief 3, to 65% certainty: at this session BP stated 'before I thought if we went into this too deep I'd stop believing in reincarnation - I still believe in it, but just not so much who I was'. Because of this apparent generalization effect the introduction of the intervention to belief 3 was delayed to determine whether the fall in degree of conviction in belief 3 would continue. This caution was justified fully; at session 14 conviction in belief 2 remained at 0% (i.e. the belief was definitely false) and conviction in belief 3 fell to only 10%. BP stated at week 14 'I feel a lot better...I feel I'm making a lot more sense, a lot more rational'. Time constraints meant that the intervention could not be delayed any longer, so the verbal challenge was introduced in the case of Belief 3 at week 15. By the close of week 15 Belief 3 was rejected completely - indeed this was true of all three beliefs. BP's degree of belief conviction in each belief remained at 0% for the remaining four sessions of the verbal challenge phase.

Over these concluding four sessions there was much evidence to suggest that BP was taking an active part in regulating his thinking. For instance, at week 20 BP said of the pulsating sensation in his head; 'when it happens mind reading is the first thing I think - then I think "Don't think such stupid things" '. At the penultimate session of the intervention phase BP reported 'I feel absolutely great, like I felt before my illness': he reported similar feelings at the concluding session also.

Figure 5.1.

BP's percentage degree of belief conviction in each of his three beliefs during each phase of the study: B (baseline), VC (verbal challenge) and FU (follow-up).

CONVICTION (%)



Degree of belief conviction in Beliefs 2 and 3 remained at 0% at each of the follow-up meetings. However, at the one month follow-up conviction in Belief 1 returned to the baseline level of 100% (i.e. the belief was definitely true). In fact the Amanda belief came back as part of a larger belief system which had developed over the previous month. This was: first, that he and Amanda had not married because his brother had discovered their relationship and had 'screwed things up', and second, that he was now intended for a famous sportswoman, not Amanda. In 1983 BP held a similar persecutory delusion regarding his family, when his brother and father were held responsible for the failure of an earlier relationship. At the one month follow-up BP stated that the reason he was not married was because in the past his brother had always had the upper hand and had therefore been able to mess things up; BP also held his brother responsible for his breakdowns. Whilst BP's belief that in the past Amanda had read his mind and influenced his life remained intact, he no longer believed that he and Amanda were meant for one another. Rather, BP stated that he was meant for the sportswoman and it was she who was reading his mind and influencing his life currently. BP believed that he and the sportswoman had met once to make their betrothals, but in order to prevent BP's brother from discovering this and interfering it had been 'fixed' so that BP would remember nothing of the meeting and betrothal. Indeed, he only 'remembered' the meeting and what had been said when he saw her on television two weeks before the 1 month follow-up and everything came 'flooding back'. This explained why he had known nothing at all of the sportswoman before. BP said of his new belief: 'That's the truth, that's reality, I've come to my senses now', and of his brother 'It'll just eat his guts out when he finds out who she is'. BP was certain that the sportswoman would come for him soon and take him away.

At the three month follow-up BP expressed his disappointment that the sportswoman had not come to him. However, he said he now realized she had 'done the right thing' by staying away a little longer to train for the Olympics. As had been

the case with Amanda, BP was now getting the sportswoman's scent when he experienced the pulsating in his head. He was still certain that in the past Amanda had read his mind and influenced his life, although as at the one month follow-up he stated that no longer believed that they were meant for one another. However, by the six month follow-up BP reported having rejected completely his belief about the sportswoman; he was also only 50% certain of his belief about Amanda. BP reported having challenged these beliefs in the same way as his beliefs had been challenged during the intervention. Unfortunately, he seemed quite depressed, saying 'I can't do bugger all for myself, and then I start blaming other people for it'.

(b) Secondary measures of change.

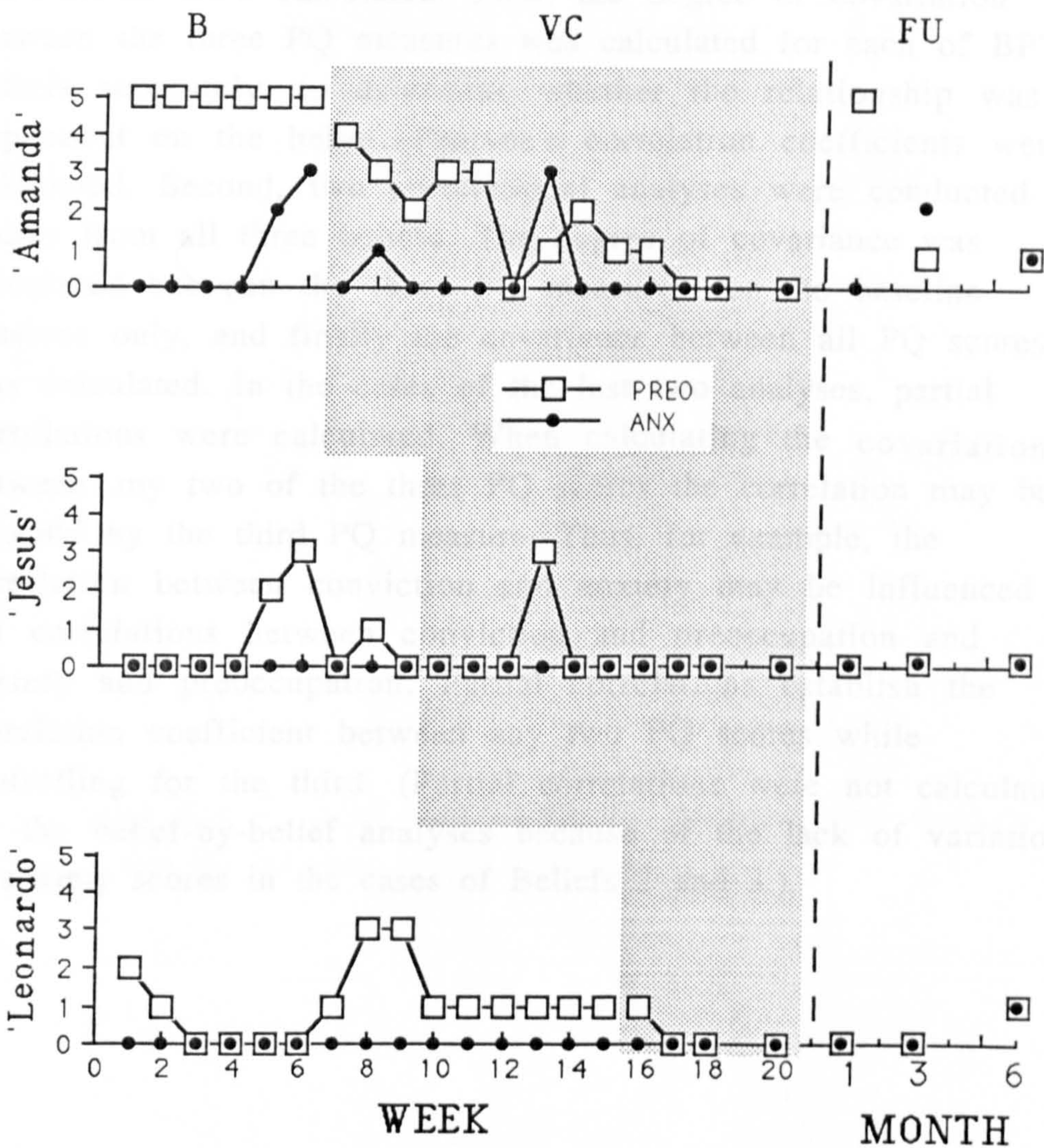
Personal Questionnaire Measures. The PQ scores for the degree of preoccupation with the beliefs and the amount of anxiety experienced at such times are both shown in Figure 5.2. As is shown, there was no consistent relationship between these two PQ measures across the three beliefs. For example, although in the case of the 'Amanda' belief baseline preoccupation scores were stable and anxiety scores varied, in the case of the two reincarnation beliefs it was anxiety which was stable and preoccupation which varied.

Figure 5.2.

Preoccupation and anxiety scores for each of BP's three beliefs during the three phases of the study: B (baseline), VC (verbal challenge) and FU (follow-up).

Note. Because both measures are retrospective, applying to behaviour in the week prior to when the measure was taken (see text), the shading to mark the introduction of the intervention appears one week later than in Figure 5.1.

P Q SCORES



While Figures 1 and 2 provide a detailed picture of changes in the three PQ measures throughout the study, Table 5.3 shows the results of an analysis of covariation between the PQ measures of conviction, anxiety and preoccupation. Five separate correlations were calculated. First, the degree of covariation between the three PQ measures was calculated for each of BP's beliefs separately, to determine whether the relationship was dependent on the belief. Pearson's correlation coefficients were calculated. Second, two correlational analyses were conducted on scores from all three beliefs. The degree of covariance was calculated between the three PQ measures for the baseline sessions only, and finally the covariance between all PQ scores was calculated. In the cases of the last two analyses, partial correlations were calculated. When calculating the covariation between any two of the three PQ scores the correlation may be affected by the third PQ measure. Thus, for example, the correlation between conviction and anxiety may be influenced by the correlations between conviction and preoccupation and anxiety and preoccupation. Partial correlations establish the correlation coefficient between any two PQ scores while controlling for the third. (Partial correlations were not calculated for the belief-by-belief analyses because of the lack of variation in anxiety scores in the cases of Beliefs 2 and 3.).

Table 5.3. *Analyses of covariance scores between the three PQ measures: for each belief individually (Pearson's r) and for baseline scores and all scores (partial correlations).*

	Conviction & Preoccupation	Conviction & Anxiety	Preoccupation & Anxiety
Belief 1	.731**	.197	.069
Belief 2	.204	<i>a</i>	<i>a</i>
Belief 3	.385	<i>a</i>	<i>a</i>
Baseline	-.02	-.26	.288
All data	.307*	.034	.275*

* $p < .05$

** $p < .01$

a indicates that a correlation could not be calculated because there was no variation on one of the measures.

There was a highly significant correlation between conviction and preoccupation scores for belief 1, which was solely responsible for the significant overall relationship between these two measures. The significant correlation between all preoccupation and anxiety scores is rendered highly dubious by the complete lack of variation in anxiety scores for beliefs 2 and 3. In the case of the scores on baseline sessions there was no significant correlation, suggesting that the significant correlations observed when all data points were considered were due to the intervention. However, when drawing any conclusions about these results, it must be remembered that Belief 2 and 3 appeared to be dependent (see Figure 5.1). This is particularly relevant to the 'baseline only' correlations, because by the close of the baseline phase in the case of Belief 3, conviction had fallen to only 10% certainty.

Beck Depression Inventory. The first clinical measure, the BDI, was included to assess whether the loss or partial loss of a strongly held long-term belief would have a detrimental effect on the client. The BDI was administered seven times: the week before the verbal challenge was introduced in the case of each of the three beliefs (i.e. at weeks 5, 9 and 15), at the close of the intervention (week 20) and at each of the follow-up meetings. According to the severity of the symptom each item on the BDI is scored 0, 1, 2 or 3. A score of 18-24 constitutes mild depression, 25-29 moderate depression and 30 and above severe depression.

As is shown in Table 5.4, there was a steady downward trend in BDI scores over the course of the intervention phase. This trend suggests that the loss of the three delusions had a general beneficial impact on BP. Although at the one and three month follow-up meetings the Amanda belief had returned and there was some persecutory ideation the BDI scores remained low: this may well reflect BP's great sense of optimism concerning his future with the famous sportswoman. This would also explain why the BDI score rose very sharply at the six month follow-up meeting, by when BP had rejected his belief about the

sportswoman entirely and was becoming far less sure of the Amanda belief again.

Table 5.4. *Beck Depression Inventory Scores at weeks 4, 9, 15 and 20 and at the 1 month, 3 month and 6 month follow-ups.*

	<u>WEEK</u>			<u>MONTH</u>			
	4	9	15	20	1	3	6
	13	4	4	5	2	6	24

Symptom Checklist. The Symptom Checklist was included to assess whether the loss or partial loss of one delusional belief led to the formation of another. In the present study BP did report a new belief following the loss of his three beliefs. The fact that the new belief shared many common features with the Amanda belief makes it a reasonable assumption that it was the loss of the Amanda belief in particular which led to the sportswoman belief.

Accommodation. In response to the accommodation measure at no point did BP report an experience of disconfirmation for a belief which had not already been subjected to the verbal challenge. Thus, for example, it was not until week nine of the study that BP reported an experience which he interpreted as contradicting his belief about Amanda. He had been expecting to see Amanda on television on a specific day and her non-appearance was interpreted as evidence that the belief was false. Also, as was stated earlier, at week eight BP reported having 'reality-testing' his Amanda belief. At week 17 of the study BP also reported an experience of disconfirmation concerning his belief about having been Jesus. He actually remembered that he had been born on Good Friday and that he been very conscious of this whilst in hospital when he formed the Jesus belief. He took this to be another factor which may have been bubbling under in his mind and have contributed to his forming the belief that he had been Jesus in a prior life.

Reaction to hypothetical contradiction. RTHC, the second measure of susceptibility of change, was measured at week 2 and 4 of the study. RTHC was only performed for the first of BP's beliefs. BP was asked how if at all his belief about Amanda would be affected if he met her and she said that none of it was true. On both occasions BP stated that such an occurrence would lead him to reject the idea that he and Amanda were meant for one another, and to doubt that she had ever read his mind or influenced his life.

(c) External Validation.

BP was interviewed shortly after the final follow-up meeting by an independent clinical psychologist, to assess the degree of belief conviction in each of the three delusions and to gain his comments on the study. BP confirmed that the intervention had led him to reject his beliefs, adding 'I was able to sort things out...I was clearer in my mind'. At the time of the independent assessment he was still untroubled by any thoughts of being either Jesus or Leonardo. He reported that his Amanda belief had started to bother him again soon after the close of the intervention. However, he was very positive about the long-term usefulness of the intervention: although the ideas about Amanda were still present he reported coping better with them again by employing arguments and techniques employed during the intervention. He reported that this process was ongoing and that he was able to control his thinking when the beliefs troubled him most. When asked to rate the extent of his present conviction in these beliefs, BP reported 30%.

Discussion

In the present experiment three delusional beliefs which had been held for between two to five years were challenged over between six and 14 sessions. Each belief was rejected totally over the closing four sessions of the intervention phase. In two out of three cases maintenance was good; however, at the first follow-up meeting conviction returned to the baseline rate for one of the beliefs.

Although the challenge put forward against the Amanda belief had no effect upon either of the two reincarnation beliefs, there appeared to be a generalization effect between these latter two beliefs. By the time the delayed verbal challenge was introduced in the case of the Leonardo belief conviction had fallen to only 10% certainty. On one level this generalization was to be expected; both Belief 2 and Belief 3 concerned the person BP claimed to have been in a prior lifetime. However, there was good reason for viewing the two beliefs as independent. First, the two beliefs were formed at completely different points in time. Second, they shared no common evidence. Third, the two beliefs may have differed functionally; BP's belief that he had been Jesus in a prior life might have been formed in order to explain why he was a 'schizophrenic'. Fourth, when challenging BP's Jesus belief it was made explicit that the possibility of reincarnation per se was not in question; rather what was being discussed was BP's claim to know that he had been Jesus. Indeed, in support of the decision to treat the two beliefs separately, the observed generalization effect was neither immediate nor consistent. At the close of the first session at which the Jesus belief was challenged (week 10), although BP's degree of conviction that he had been Jesus fell his conviction that he had been Leonardo remained unchanged. At the subsequent session (week 11) conviction in each belief was scored at 80%; however, at the close of week 12 BP's conviction that he had been Jesus fell to only 50% and his conviction that he had been Leonardo rose to 95% certainty. Only at weeks 13 and 14, when BP rejected entirely his belief that he had been Jesus in

a prior life, was there a strong and clear generalization effect to his belief that he had been Leonardo.

In the cases of the two reincarnation beliefs maintenance was good. However, in the case of the Amanda belief at the one and three month follow-up meetings degree of conviction was once again scored at 100% certainty. In fact the Amanda belief came back in an encapsulated form as part of a new belief system. That is, although BP reported being absolutely certain that Amanda had read his mind and influenced his life in the past, he no longer believed that she was still doing these things. Rather, these functions were now being carried out by another woman, a famous sportswoman. Thus, BP's new belief system retained the central notion of a woman controlling aspects of his life preparatory to marrying him. In addition, to account for the failure of his prediction that Amanda and he were to be married, BP also reported persecutory ideation hitherto unseen during the course of the study. Similar paranoid beliefs about his brother had been expressed in 1983 to account for the failure of an earlier relationship. Thus, once again the failure of a relationship to come to fruition was explained by the idea that his family was interfering deliberately to prevent him from finding happiness through marriage.

The present study suggested a number of ways in which the weakening or rejection of a deluded belief following a belief modification treatment might be of benefit. First, during the verbal challenge phase, as BP became less sure of his belief about Amanda, so he became progressively less preoccupied with the belief. Second, the rejection of his three beliefs might have been responsible for the more general improvement observed on the Beck Depression Inventory at the close of the intervention phase. Third, the intervention empowered BP to regulate his own thinking more effectively as evidenced by both the final follow-up meeting and the independent assessment. Experiment 2(a) offered sufficient promise to merit replication, which, with some procedural variation, was attempted in Experiment 2(b).

EXPERIMENT 2(b).

Introduction.

A direct replication of experiment 2(a) was undertaken: the measures, procedure and intervention were very similar. The most significant change concerned the manner in which the independent assessment was conducted. Whilst in Experiment 2(a) the assessment was conducted by an interview shortly after the final follow-up, in the replication formal assessments were conducted prior to, during and following the intervention.

Subject BG: date of birth 18-8-36

The client involved in the second study, BG, was a 51 year old married woman with a psychiatric history going back over 20 years. This included: frequent auditory hallucinations, an attempted suicide and extensive delusional thinking. The three beliefs challenged in the present study had been held for the past ten years at least, as evidenced by the case notes and workers who had been involved with BG over this time.

Belief 1. That she was only in her late teens.

Although BG was in fact 51 she believed that she was not yet twenty. Her voices told her that she had been given a 'body skin' with wrinkles which made her look much older than she actually was; she also had a microphone fitted to give her a Lancashire accent. BG believed further that all the memories she had of her life over the past 50 years had been fed in by what she called 'autosuggestion' - that is, she was made to watch hundreds of video tapes.

Belief 2. That she was Fiona Heidi Kirsty Montague, the daughter of Lord and Lady Montague, who were actually Princess Anne and Marc Phillips.

BG believed that the royals had placed her in the care of her mother shortly after her birth. Although the royals wanted her back, the Queen would not let her return until she had done certain

things; for instance, BG had to find £100,000. On one occasion on television Princess Anne had waved at BG, and the Queen looked very concerned about her on another occasion.

Belief 3. That her life was being planned and controlled by top politicians and gentry.

This included 'breeding' with her; BG believed she had been raped numerous times and had six children, who were being looked after by the Pope. The people controlling her life also determined that her husband should not have sex with her; only the young man who raped her and she was to marry subsequently was allowed to have sex with her. To ensure that she was faithful to the young man, a camera and poison tipped claw were fitted in her vagina. They also tried to get her to commit suicide to 'see how her mind worked'. The culmination of the process was her being crowned Queen of England.

Procedure

There were two procedural changes in the manner in which three of the dependent variables were administered; otherwise, the experiment followed an identical procedure to that of Experiment 2(a). First, the external validation was ongoing: BG was interviewed between sessions 4 and 5, 9 and 10, 13 and 14, and 20 and 21. Also, as in Experiment 2(a), a final assessment was conducted following the 6 month follow-up. The second difference concerned the administration of the two clinical measures, the BDI and Symptom Checklist. In the present study these measures were administered at week 4, 9, 13, 20, and at each follow-up meeting: in Experiment 2(a) a delay in challenging the third of BP's beliefs meant that the BDI and Symptom Checklist were administered at week 4, 9, 15 and 20, and at each follow-up.

There follows a summary of the verbal challenge put forward to counter evidence for BG's royalty belief and her belief that her life was being controlled. In the case of Belief 1, that she was only in her teens, BG cited as evidence having been told that she had a 'step brain'. This was literally a step in the brain; the voices said the Queen also had one. When the person with such a brain reached

thirty they would have an outstanding brain; until then they would be an absolute imbecile. This piece of evidence was challenged by pointing out the following. First, there was no medical knowledge of a step brain. Second, the Queen was crowned before her thirtieth birthday; she was not imbecilic. Third, BG herself stated on many occasions that her own mind was far better when she was younger, and that she felt her mental ability was deteriorating.

The experimenter made clear to BG how beliefs direct the way all people interpret particular situations. One of the many examples the experimenter employed to make this point concerned the way BG now viewed her attempted suicide. BG reported that at first she believed that she had been driven to attempt suicide by a number of distressing life events, including the death of her mother. Only subsequently did BG realize that the government had driven her to attempt suicide in order to 'understand how her mind worked'. The experimenter suggested that BG's re-interpretation of her attempted suicide was motivated by her core belief that the government was influencing her life, rather than by any feature of the situation itself.

The second stage of the verbal challenge involved challenging the belief directly. In the case of BG, the three beliefs challenged were clearly identifiable and distinct; they also shared no common evidence other than the experience of auditory hallucination (the possibility that the voices were in BG's own head was not raised until the third of BG's beliefs was discussed). However, on another level the three beliefs were all part of one very elaborate belief system; that BG was being manipulated and controlled by the government and royalty. Thus, when challenging BG's third belief the experimenter drew heavily upon the prior discussions of Belief 1 and 2. In order to describe the argument put forward against BG's belief that the government was controlling her life, it is necessary first to summarize the earlier discussion with BG of her belief that she was only in her teens.

The challenge put forward to counter BG's belief that she was not yet twenty began with the experimenter pointing out instances of inconsistency and irrationality within this belief system. For instance, in addition to telling BG that she was in her teens and the daughter of Anne and Marc, the voices also told BG that she was the Queen of Denmark and in her 50's. A more fundamental inconsistency concerned BG's belief that her knowledge of her upbringing and marriage had been fed into her mind by what she called autosuggestion - watching endless video tapes. BG believed that those friends who shared some of these memories had been hypnotised by government agents and made to concur. Thus, BG's contention was that what she thought had been her life was not in fact so; from her childhood, through her marriage and the death of her mother, to the present had all been invented by the government and the information fed into BG. Yet many of the central facets of her belief that she was being controlled by the government took place during just this period. For example, BG's attempted suicide, the purported rape and her having children, all followed her marriage and the death of her mother. Thus, although on the one hand the voices told BG that this whole period of her life was fictitious, on the other hand they told her that events from this period formed an integral part of the government's plans for her. The experimenter pointed out this inconsistency to BG, and emphasised that the voices could not have it both ways. Either this period of her life was fed in by autosuggestion, in which case she was not raped and had not had six children, or she was raped and had six children and this period of her life was not fed in by autosuggestion. Equally, the voices told her that the government had led her to attempt suicide in order to 'find out how her mind worked' - yet according to other information from the voices this event never took place.

Discussion of BG's belief that she was being controlled by the government began by highlighting instances of inconsistency and irrationality. One such example concerned BG's story about how she became a barrister - an occurrence which she believed was to play a significant part in her return to the royals. The voices told her that in order to become a barrister one had first to be sacked from one's job. BG herself was sacked from a secretarial post, thus

establishing her as a barrister. She held that this was part of the government's plan, because as a barrister she was now entitled to claim houses and so make the £100,000 the Queen demanded she acquire before returning to the palace. The experimenter made clear to BG that not only did being sacked from one's job not automatically make one a barrister, but also barristers were not entitled to claim houses from people.

On the basis of BG's comments during the baseline phase, together with the case notes and discussion with professionals involved, it was possible to piece together a developmental account for BG's beliefs. Over the years BG's marriage had been a cause of great strain; she had only learned following the wedding that her husband was impotent. BG was very close to her mother and described her mother as being her only confidant. BG reported first hearing voices following the death of her mother, whom she nursed through a long and painful illness. It was following the death of her mother that BG began to hear voices. To account for the auditory hallucinations BG assumed that a radio transmitter had been implanted inside her head. BG developed her beliefs gradually from this point onwards. BG stated that many of the central aspects of her beliefs she thought of herself; others were provided by the voices.

As in Experiment 2(a) the essential feature of the argument was that the beliefs had come about in reaction to and as a way of making sense of particular experiences. One of BG's experiences which required an explanation was hearing voices inside her head, and another was the content of what the voices said to her. The experimenter argued that BG's beliefs developed in response to these two factors in particular. The experimenter pointed out that the experience of hearing voices was a real one, but that it was quite possible that the 'voices' were coming from BG herself. The experimenter observed that many people reported similar experiences, often following a breakdown. In some cases the breakdown followed shortly after a traumatic event: it was suggested that the death of BG's mother, coming on top of the long standing strain caused by her marital difficulties, may have acted

as just such a trigger. The experimenter thus contended that the voices BG heard were her own thoughts.

In support of this contention the experimenter suggested that the voices often fulfilled a compensatory function, possibly in order to make BG's life more bearable. Each of the major stressors that BG reported as having 'eaten away' at her over the years was alleviated directly through her beliefs. These main stressors were the painful death of her mother, her feeling of having 'wasted her life', her bitter disappointment about having no children, and her lack of a sex life. According to her delusions: (i) her mother had not died of cancer, and, indeed, was not her mother at all (ii) far from having wasted her life she had hardly begun it (iii) she had six children (iv) she was enjoying an active sex life with the man whom the government intended her to marry. What was noteworthy, and the experimenter pointed out to BG, was that the voices often fulfilled this compensatory role on a day to day level. For instance, when one of BG's relatives, who lived with her and her husband, was particularly hurtful, the voices would tell BG that the relative was fatally ill and would soon be dead, or would be moving house soon, and so on. On another occasion BG became concerned when out on a day trip that she had left the cooker switched on. However these concerns were allayed by the voices, who told her that she switched the cooker off before leaving her house - yet when she returned home she discovered that the cooker had been left on.

In support of the alternative interpretation of BG's beliefs the experimenter made a number of points, including the following. First, the fact that much of what the voices told BG was inconsistent and incompatible suggested that BG was the source of the voices rather than government intelligence forces. Second, some of what the voices told BG was untrue; autosuggestion, for instance, is not a process whereby people are brainwashed by excessive exposure to video recordings. Moreover, to watch a lifetime's worth of memories on video would take a lifetime in itself. Once again the experimenter made the point that this type of mistake is not what would be expected from top government intelligence officers. Third, the experimenter drew BG's attention to the unanswered questions

of why on earth Princess Anne should choose to send one of her children away, and why the government was expending so much time and energy in moulding her before she was allowed to return to the royals. Fourth, the fact that BG had been waiting to be returned to the royals for considerably more than 10 years cast further doubt upon the validity of her belief system. Indeed, BG reported tragically that twice in the past the voices had told her that they were coming to take her back to the royals; on both occasions she had packed her bags, collected her jewelry from the solicitors and waited to no avail. This too was consistent with the view that BG's beliefs, though understandable within the context of her experiences, were false.

Results

(a) Conviction.

Degree of belief conviction was employed as the major measure of recovery from delusional thinking. Figure 5.3 shows BG's percentage conviction scores in each of her three beliefs during each phase of the study. In the case of Belief 1, that BG was only in her late teens, belief conviction fluctuated between 80 and 100% certainty during the baseline phase. On the introduction of the verbal challenge at week 6, there was an immediate and substantial drop in belief conviction to 25% certainty: BG stated 'Well, I look 50 and I tire more quickly than I used to; I must be 50'. Conviction remained at this level at week 7. At week 8, in spite of observing an instance of disconfirmation during the preceding week, BG's conviction rose very slightly to 30% certainty. At weeks 9 and 10 conviction fell to only 10% sure of the belief; BG stated at week 9 '18 is what they want me to believe...looking in the mirror and weighing everything else up, I believe I'm 50', and at week 10 'I'm getting more certain every time...It's a good sign'. At week 11, when the belief was rejected totally for the first time, BG said of the possibility of her being in her late teens 'It would be very nice, I know, but its not true'. Over the subsequent six sessions conviction was rated at between 0 and 10% certain; at the closing three sessions of the verbal challenge conviction was rated 0%. This was maintained at each of the three follow-up meetings. At the three monthly follow-up BG said 'I look in the mirror and I can't possibly be twenty - the mirror doesn't lie'.

In the case on BG's belief that she was the daughter of Lord and Lady Montague, alias Princess Anne and Marc Phillips, belief conviction was stable over the first six sessions of the study. At weeks 7 and 8 conviction fell to 80% and 70% respectively. BG attributed this drop in belief conviction to the effect of the intervention on her belief that she was only in her late teens: she now felt that it was probably the case that she was 51 years old, and Princess Anne appeared to be younger than this. At week 9 conviction that she was the daughter of Princess Anne returned to the baseline rate of 100% certainty. At week 10 BG's belief that she

was of royal blood was challenged. By the close of this session the belief was rejected totally; indeed the belief was rejected at all subsequent sessions with the exception of weeks 14 and 16, when BG expressed her opinion that it was just possible that the belief was true and rated conviction at 10% certainty. At the one and three month follow-up meetings BG stated that she was absolutely certain that she was not the daughter of Princess Anne. At the final follow-up meeting, in spite of saying 'I can't possibly see how I can be anything to do with Princess Anne because she's years younger than me. That's gone by the board', BG gave a percentage conviction rating of 20%.

In the case of BG's third belief, that her life was being controlled by the government, belief conviction remained at 100% throughout the thirteen week baseline phase. On one occasion BG stated 'I've been coming here [the day hospital] for years now, and I still believe all these things are true'. On the introduction of the verbal challenge at week 14 there was a drop in belief conviction to 80%. BG stated of her belief 'It's like a shield...I've got to try to face up to what I'm hiding from'. At the subsequent session conviction fell again, to 70%: BG once again demonstrated an insight into the possible functional nature of her beliefs, saying 'It's like a justification...you're hurt and you seek solace'. At week 16 there was a substantial drop in belief conviction to only 10%; BG stated that she accepted the alternative interpretation of her beliefs, adding 'I think you're doing me good talking to me'. At the following session BG rejected entirely her belief that her life was being controlled by the government; in fact BG's belief conviction was 0% in each of her three beliefs. In this session BG stated that she was 'definitely getting over it' and added that 'realization is half the cure, isn't it'. Each of the three beliefs was rejected at the remaining two sessions of the intervention phase. At week 19 of the study BG gave a clear example of self-regulation: over the preceding week the voices told her that she was Sarah Ferguson's mother - however, BG refused to believe this news, telling herself that this could not possibly be true and not to be 'so stupid'. In the final session of the intervention phase BG offered the following explanation for the emergence of her beliefs: 'I think I made a mistake, I misinterpreted the whole thing'. At the one month

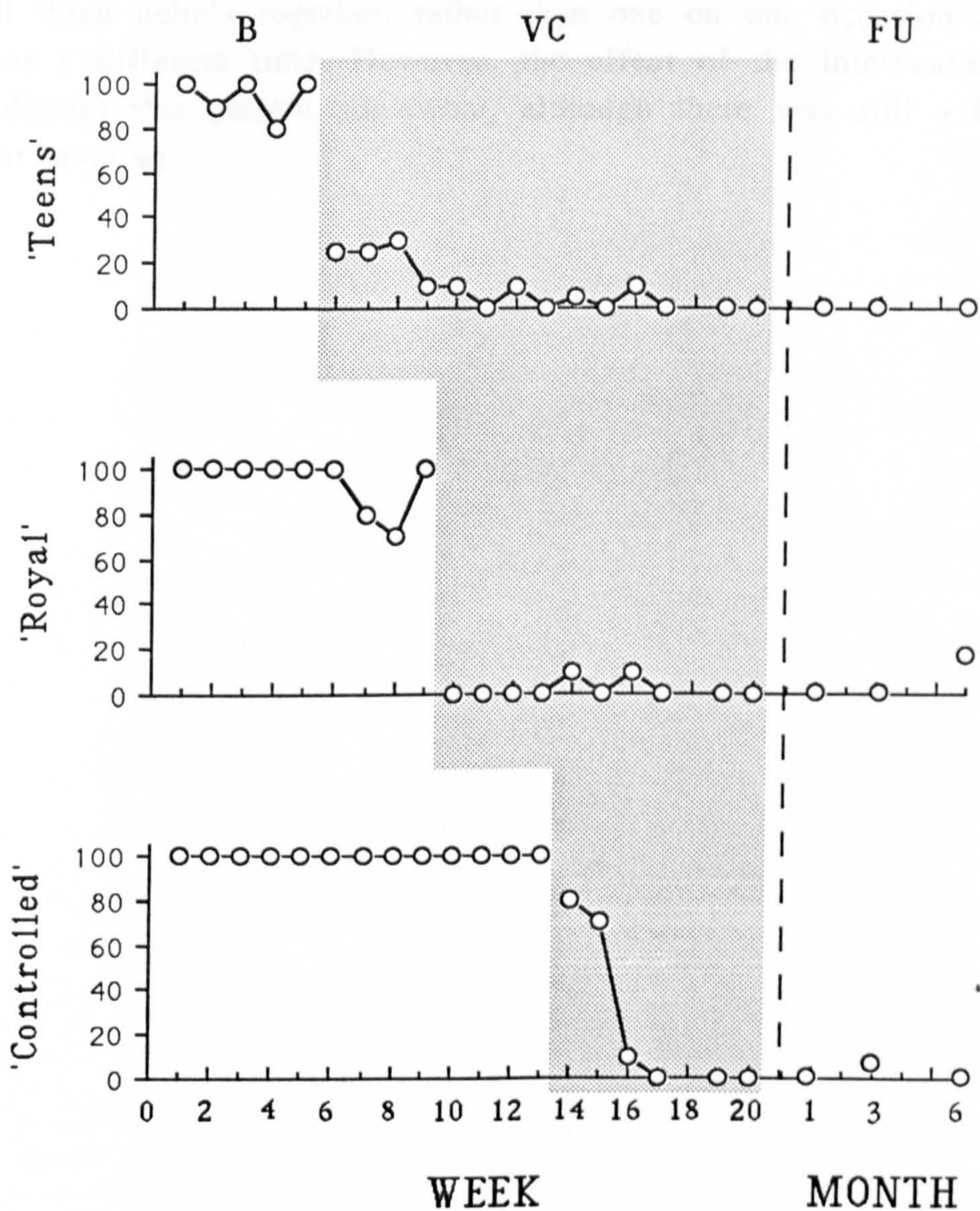
follow-up BG was still absolutely sure that her life was not being controlled by the government: at this meeting BG said 'I'm certainly a lot better than I was...I'm not all dreaming about the place'. At the three month follow-up meeting BG stated that she thought it just possible that the government was controlling her life and gave a percentage conviction rating of 5% certainty. At the final follow-up BG stated that she was absolutely certain that the government was not controlling her life. She provided further evidence of self-regulation, adding that on those occasions when she thought about the belief 'logic always come to the fore'.

Figure 5.3. BG's percentage degree of belief conviction in each of her three beliefs during each phase of the study: B (baseline), VC (verbal challenge) and FU (follow-up).

(b) Secondary Measures of Change

The degree of preoccupation and anxiety are shown in Figure 3.5. With rare exceptions, the anxiety and preoccupation scores during baseline were the same for each subject; that is, BO tended to think about all three actors' responses, rather than one or two actors and

CONVICTION (%)

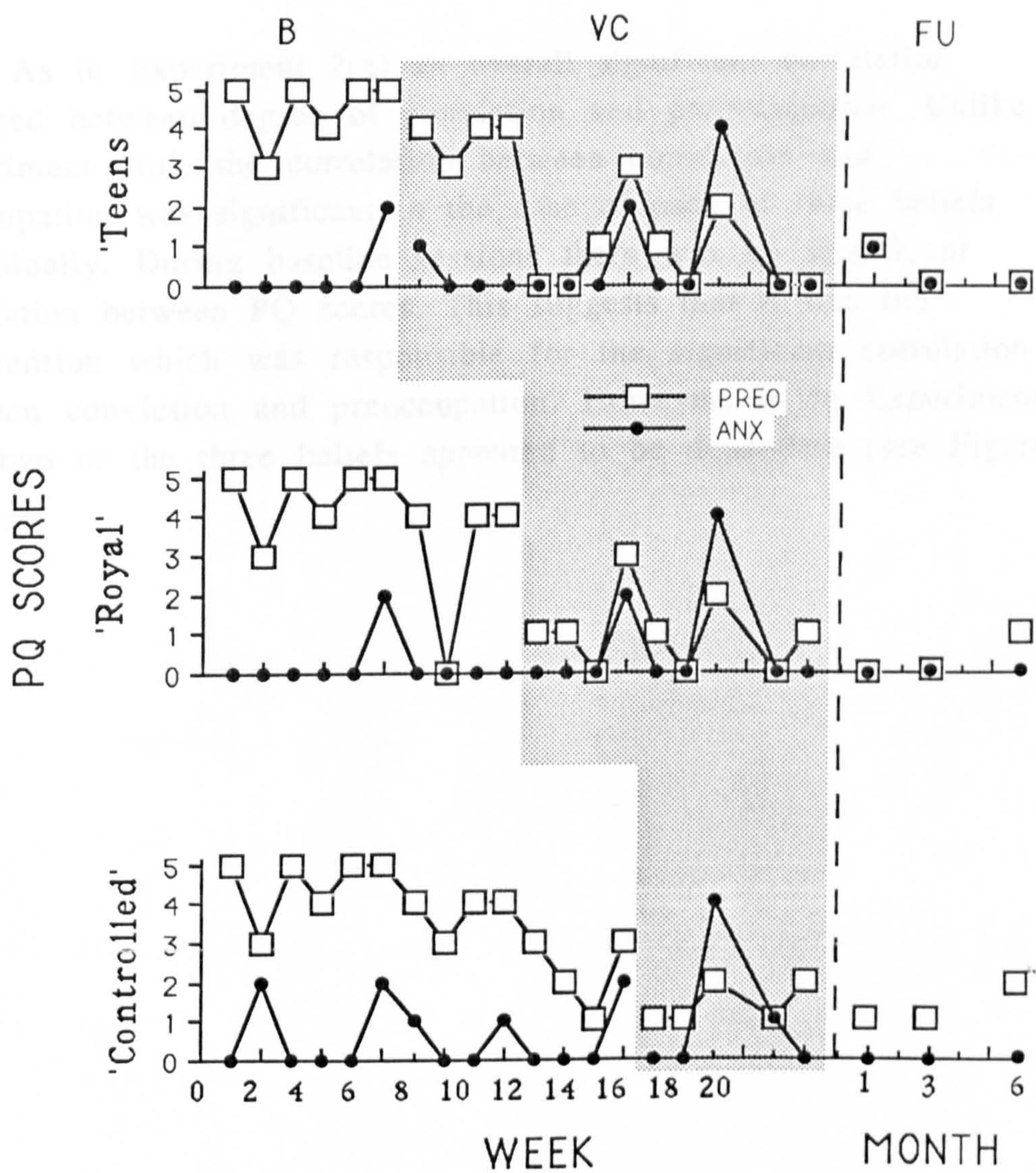


(b) Secondary Measures of Change

Personal Questionnaire Measures. The PQ scores for the degree of preoccupation and anxiety are shown in Figure 5.6. With rare exceptions, the anxiety and preoccupation scores during baseline were the same for each belief; that is, BG tended to think about all three beliefs together, rather than one on one occasion and another at a different time. However, the effect of the intervention was to disrupt this pattern somewhat, although there was still a fair degree of overlap.

Figure 5.4. Preoccupation and anxiety scores for each of BG's three beliefs during the three phases of the study: B (baseline), VC (verbal challenge) and FU (follow-up).

The correlations calculated were similar to those in Experiment 1a. Thus, three Pearson's r 's were calculated, one on the PQ scores for each separate belief, and two on the correlations with conductance, one on baseline PQ scores for all beliefs and one on all PQ scores. All correlations are shown in Table 5.6.



The five correlations calculated were identical to those in Experiment 2(a). Thus, three Pearson's analyses were conducted, one on the PQ scores for each separate belief, and two partial correlations were conducted, one on baseline PQ scores for all beliefs and one on all PQ scores. All correlations are shown in Table 5.6.

As in Experiment 2(a) an overall significant correlation emerged between degree of conviction and preoccupation. Unlike Experiment 2(a), the correlation between conviction and preoccupation was significant in the case of each of three beliefs individually. During baseline sessions there was no significant correlation between PQ scores. This suggests that it was the intervention which was responsible for the significant correlation between conviction and preoccupation. However, as in Experiment 2(a) two of the three beliefs appeared to be dependent (see Figure 5.3).

Table 5.6 . *Analyses of covariance between PQ scores for: each belief individually (Beliefs 1, 2 and 3), the baseline scores for all beliefs (Baseline), and for all PQ scores (All data).*

	Conviction & Preoccupation	Conviction & Anxiety	Preoccupation & Anxiety
Belief 1	.725 **	-.207	.178
Belief 2	.752 **	-.096	.145
Belief 3	.667 **	-.059	.126
Baseline	.369	.188	.127
All data	.701 **	-.098	.148

* $p < .05$

** $p < .001$

Beck Depression Inventory. The scores on the Beck Depression Inventory are shown in Table 5.7. The BDI was administered once during the baseline phase (week 4), three times during the intervention phase (weeks 4, 9, and 13) and at each follow-up (1 month, 3 month and six month). Over the course of the intervention phase there was a steady downward trend in BDI score; at follow-up scores were also lower than the pre-intervention score recorded during the baseline phase. As in Experiment 2(a), this finding offers no support for the view that the loss of a delusion or delusions would result in increased depressive feelings.

Table 5.7. Beck Depression Inventory Scores at weeks 4, 9, 13 and 20, and at each follow-up (1 month, 3 month and 6 month).

<u>WEEK</u>				<u>MONTH</u>		
4	9	13	20	1	3	6
17	12	12	6	9	11	8

The Symptom Checklist. This measure proved sensitive to the changes in BG's delusional thinking brought about by the intervention. No new symptomatology was reported in response to the Symptom Checklist during the course of the study.

Accommodation. In the case of both Belief 1 and 2 BG did report instances of disconfirmation which led to her doubting both beliefs during the baseline phase. In the case of belief 1, at week 2 of the study BG reported having felt tired and old; certainly not how a teenager should feel. In the case of the belief about being the daughter of Princess Anne BG reported an experience of disconfirmation at week 7 of the baseline phase. This concerned seeing Anne on television and feeling too old to be her daughter; however, this instance was clearly due in part to her view that she was more than likely not in her teens. In the case of the belief about being controlled by the government, at no point during the baseline phase did BG report an instance of disconfirmation; nor indeed did she do so during the verbal challenge phase. Following the introduction of the interventions BG reported several instances of disconfirmation in Beliefs 2 and 3. For instance, at week 9 BG reported having met a friend with whom she was in regular contact; the friend's daughter, who was in her thirties, was also present at the meeting. BG stated feeling that she could not possibly be younger than the daughter.

Reaction to Hypothetical Contradiction. As in Experiment 2(a) RTHC was measured for one belief only - in BG's case, her belief that she was the daughter of Princess Anne. BG was asked whether her belief about Princess Anne (i.e. that Princess Anne was BG's mother and had placed BG with foster parents when she was a baby) would be affected if Princess Anne herself told BG that the belief was completely false. Both at week 2 and 4 of baseline, when faced with this instance of hypothetical contradiction, BG replied that this would not affect either her belief conviction or her belief content; rather, it would be seen as part of the overall plan.

(c) Independent Assessment

A first meeting was conducted prior to the experimenter challenging BG's first belief. At this initial interview the interviewer, a trained nurse and psychology graduate, obtained answers to the following questions: what were BG's beliefs, how long had they been held, had BG doubted her beliefs at all over the past 12 months, how certain was BG of her beliefs at present, and how BG's beliefs influenced her life. The initial interview yielded the following information. First, BG reported holding the following beliefs: (i) that she was only in her late teens, (ii) that she was the daughter of Lord and Lady Montague, who had her adopted when she was very young, (iii) that the government was monitoring her constantly to ensure that she led the kind of life her real parents desired of her, and (iv) that she had been raped and had children with a young man whom the voices told her was her real husband and with whom she was subsequently to be reunited. Second, BG said that she had held these beliefs for over ten years. Third, BG stated that at no point in time over the past 12 months had she doubted the truth of her beliefs, adding 'the government wouldn't have gone to all this trouble if it wasn't true'. Fourth, BG reported being absolutely certain of each of these beliefs. Fifth, she felt that the beliefs impinged on her life only in so far as she tried to do things in the way Lord and Lady Montague would wish; thus, she did not smoke and drank wine in moderation only. However, she said of her beliefs 'it frightens me not knowing what is really happening'.

The second interview was conducted prior to the tenth session of the study - that is, following four sessions at which BG's belief about being in her late teens was challenged and prior to her remaining beliefs being challenged. When discussing her belief that she was not yet twenty, BG said that although the voices told her she was young she was unable to reconcile this with the fact that she looked like a 50 year old woman: BG stated 'I am almost certain that I am 51'. BG stated having doubts that she was the daughter of Princess Anne and Marc Phillips. BG remained absolutely certain of her final belief that she was controlled by the government. The

interviewer concluded by stating that since the previous meeting with BG there had been a major drop in the degree of conviction with which BG held her belief about being under twenty, and a less dramatic reduction in her degree of certainty that she was the daughter of Princess Anne.

The third assessment was conducted prior to session 14 - that is, following four sessions at which the royalty belief was challenged and prior to the challenge being introduced to the final belief. BG was still almost certain that she was 51. When discussing her belief about being of royal blood, BG said that although the voices told her this was the case her own logic was now telling her that she could not be their daughter - 'If I am 51 how can I be, I mean, she's younger than me'. BG reported having no doubt whatsoever that the government was controlling her life.

The fourth assessment was conducted prior to the 20th and final session of the intervention phase. BG reported being absolutely certain that each of her beliefs was false, corresponding to 0% certainty. To ensure that this was the case for each of BG's beliefs, the interviewer asked BG to list those beliefs which she now rejected totally. These were: that she was the daughter of Princess Anne, that the government was using brainwashing and hypnotism to control her, that she had children and that she was in her teens. No other beliefs were recalled. At this point the interviewer asked BG why she had rejected her beliefs. BG stated that it was due to her participation in the present study. Of the study she stated: 'We've thrashed it out, we've discussed it, it's all come to a head and I feel tons better....I realize now it was all in my mind, it wasn't anything from outside doing it to me. The whole thing was in my mind.' BG stated that the discussions had occasionally been slightly upsetting, but that she had come through it.

A final assessment was conducted prior to the final follow-up meeting. At this meeting BG reported still being absolutely certain that she was in fact 51 and that she was not being controlled by the government. When asked whether she believed she was the daughter of Princess Anne and Marc Phillips, BG replied 'I am not certain this is true, but I think it could be'. When asked to quantify

this she stated being 20% certain that she was their daughter. BG attributed this increase in her conviction that she was of royal descent to 'things going against her at home': she stated that she was aware the belief might be an escape route. BG reported having been able to prevent her beliefs from returning by applying 'logic'. Specifically she was able to remind herself of the alternative explanation put forward to account for her beliefs during the verbal challenge phase. BG also reported reminding herself of the evidence discussed with the experimenter in the present study which ran counter to her beliefs, and in this way too being able to regulate her delusional thinking.

Discussion

In the present study three delusions were challenged which had been held for over ten years; each was rejected following between six and 15 sessions of the verbal challenge intervention. In each case maintenance was good. As in the first experiment there appeared to be a generalisation effect between two of the beliefs; in this case BG's doubt that she was in her late teens seemingly led her also to doubt that she was the daughter of Princess Anne. However, the effect was neither immediate nor was it maintained.

BG also reported being able to regulate her thinking effectively as a consequence of the intervention. Specifically she was able to remind herself both of the alternative explanation put forward to account for her beliefs during the verbal challenge phase, and of the evidence which ran counter to her beliefs. This self-regulation was ongoing at the time of the final follow-up and independent assessment and included being able to resist the promptings of her auditory hallucinations. For instance, BG resisted the temptation to accept that she was mother of Sarah Ferguson, as the voices would have her believe.

General Results and Discussion

In each of the experiments reported in this chapter three delusional beliefs held for between two and 10 years, were rejected as a consequence of the verbal challenge intervention. This finding is consistent with other studies which have attempted to modify the delusional thinking of people diagnosed as schizophrenic (e.g. Watts et al., 1973, Chapter III). In the cases of five of these six beliefs maintenance was good. Although one of BP's beliefs did return at the 1 month follow-up, conviction fell again at the final follow-up meeting and subsequently at the independent assessment, and BP attributed these two reductions in belief conviction to his ability to draw on the discussions with the experimenter during the verbal challenge.

In both studies there appeared to be a generalization effect. On one level both might have been expected: in the case of BP the two beliefs concerned reincarnation, whilst BG's belief that she was only in her teens had direct implications for whether she was the daughter of Princess Anne. However, in both cases the two beliefs shared no common evidence; moreover, neither generalization effect was immediate nor consistent. Certainly this was not the only possible outcome - both clients could easily have modified their untreated belief to accommodate the change. Thus, for example, BG could simply have stated that Princess Anne was far older than she looked; this is rendered more plausible when one remembers that people's true age being disguised successfully was already part of BG's thinking. The fact that the effect generalized in both cases might indicate an ability on the part of each client to think rationally about their beliefs. This would be consistent with the suggestion made by Bleuler and Bleuler (1986) that in the case of many people diagnosed as schizophrenic the ability to reason is not lost.

The PQ was employed to measure conviction, preoccupation and anxiety. The two experiments offered support for the view of delusions as multidimensional. First, during the baseline phase there was a fair degree of fluctuation in both preoccupation and anxiety scores, even though conviction remained stable. Analyses of

covariation of PQ baseline scores yielded no significant correlation. Second, in both cases when all data points were correlated, anxiety was found to be independent of preoccupation. In the case of BG conviction was found to be independent of anxiety too, and although a significant correlation emerged between BP's anxiety and conviction scores across all sessions, this correlation is rendered highly dubious by the total lack of variation in anxiety scores on two of BP's three beliefs. In both experiments a significant correlation did emerge between conviction and preoccupation scores for all sessions; this finding might seem to mitigate against the multidimensional view. However, given that in neither experiment was the correlation between baseline conviction and preoccupation scores significant, this suggests that the overall significant correlation between preoccupation and conviction was due to the intervention. Put in other words, when BP and BG stopped believing that their delusions were true, they subsequently spent far less time thinking about them.

The Beck Depression Inventory was included to see whether the loss or partial loss of a strongly held long-term delusion might have a detrimental effect on the clients affective state. In fact the converse appears to be true. In the case of both BP and BG the BDI score recorded at the close of the intervention phase, by when each belief was rejected, was lower than the BDI score recorded during the baseline phase. In the case of BG the BDI scores remained low during the follow-up period. BP's BDI score escalated dramatically at the 6 month follow-up. This probably was due not just to his rejection of his new belief about the sportswoman and partial rejection of his Amanda belief, but to the self-accusatory manner in which he was challenging his own delusional thinking: 'I can't do bugger all for myself, and then I start blaming other people for it'. To see whether the general downward trend in BDI score over time was significant statistically, a Friedman's analysis of variance was calculated on the two sets of scores: the trend turned out to be non-significant.

The symptom checklist was included to assess whether the loss of one delusion would be followed by the formation of a new belief. The symptom checklist proved sensitive to the changes in

delusional thinking over the course of the two experiments. Although in the case of BP the loss of his delusions was followed by the formation of new belief, in the case of BG no new beliefs were reported following the loss of her three delusions. In the case of BP the large degree of similarity between the Amanda belief and the subsequent sportswoman belief suggests that it was the loss of the Amanda belief in particular which led to the emergence of the new delusion. The similarity of the two beliefs also begs the question of whether the beliefs were functionally similar. Certainly, both beliefs may have helped allay BP's often voiced fear that he would never be married, perhaps whilst also protecting him from the danger of another painful rejection such as happened in 1983. However, the argument that beliefs which are functional will therefore be replaced is inadequate. The beliefs held by BG might also be seen as functional, as indeed might the Jesus belief held by BP.

Results on the reaction to hypothetical contradiction measure were ambiguous. BP was responsive to hypothetical contradiction and sensitive to the interventions, whereas BG was unresponsive to hypothetical contradiction and yet sensitive to the interventions. The accommodation measure was more informative. As in the Brett-Jones et al. study, very few instances of disconfirmation were reported during the baseline phase; in fact, BP did not report a single instance and BG reported only two, and these had little effect on her beliefs. Both clients reported numerous instances of confirmation. However, it should be remembered that a failure to seek to disconfirm a strongly held belief appears to be a further instance of continuity with the normal functioning. Interestingly, both clients also interpreted ambiguous information as confirmatory. Thus, for instance, BP reported an occasion when a dishevelled, messy girl with no laces in her shoes had asked him for some money at a bus stop. Although he did not recognize the girl, BP's core delusion led him to believe that the girl had in fact been Amanda 'in disguise', and that she had planned the meeting as a way of reminding him of her presence. This is a clear case of rule governed behaviour, and more particularly of 'behavioural rigidity', a familiar feature of the human operant research discussed in

Chapter II, where a particular rule or hypothesis leads the individual to interpret events in a prescribed fashion.

Having come to doubt his beliefs during the verbal challenge phase, BP subsequently did report instances of disconfirmation and began to 'reality test' his beliefs. Hole et al. (1978) reported a similar finding (see Chapter III). BG also reported a number of instances of disconfirmation following the introduction of the verbal challenge phase. Thus, following the introduction of the verbal challenge both clients appeared to view their beliefs more as hypotheses than as dogmas. This finding is consistent with the notion of 'deautomizing' verbal control, a central aspect of many cognitive-behavioural therapies (Chapter I). This concerns the process whereby the regulatory power of particular core beliefs or rules is weakened as the client gains insight into the way they guide and direct his or her behaviour. Having deautomized the control of core beliefs, the therapist typically then attempts to assist the client to monitor his or her verbalisations and actions in a critical manner - that is, the therapist seeks to impart self-control. In the present study the long-term maintenance of the effects appeared to owe much to just this process. The independent assessments and follow-up meetings suggested that the intervention left both clients better able to regulate their own delusional thinking. Both reported coping well with delusional ideas which recurred after the close of the verbal challenge phase. In the case of BG this included resisting the urgings of her auditory hallucinations. Even BP's ideas about Amanda were ultimately, if, somewhat painfully, brought under verbal control.

The ability of BP and BG to regulate their thinking effectively is consistent with the growing literature on the role of language in guiding behaviour within the normal and clinical populations (see Chapter I). As such, it is yet further evidence of a continuity between the functioning of people with delusions and those without. If one thought in terms of the theories of delusional behaviour discussed in Chapter III, a continuum view would be most consistent with the position of those like Maher, and Nisbett and Valins, who argue that delusions are rational explanations for experience. When one bears in mind that very few people are

rational in any optimum sense (see Chapter I), this can be taken to mean that deluded people are using the same kinds of belief formation processes as non-deluded people. Certainly both BP and BG formed beliefs which within the framework of their experiences were understandable. It might be countered that whilst the belief processes are the same, deluded people have abnormal experiences, and in this sense are not on a continuum with normal functioning. However, although BG's beliefs, for instance, were based partially on auditory hallucinations, there is evidence to suggest that hallucinations may be on a continuum of their own with normal functioning (Strauss, 1969; Slade & Bentall, 1988).

In summary, the two experiments reported in this chapter corroborate further the view that delusions are open to modification. Furthermore, the studies suggest that it is both possible and productive to measure a number of aspects of delusional thinking before, during and after introducing an intervention. In order to define the parameters of the verbal challenge as an intervention, and to assess the generality of the trends recorded on the secondary measures of change, there was a need to conduct additional studies involving more clients.

CHAPTER VI

THE MEASUREMENT AND MODIFICATION OF DELUSIONAL BELIEFS. EXPERIMENT 3

Introduction

In Chapter V two single-case experiments were reported involving clients with three distinct delusional beliefs. Each experiment employed an across behaviours multiple-baseline design. However, many deluded individuals hold only one delusional belief. In Experiment 3 six clients took part in a belief modification experiment, each of whom held only one clearly defined delusion. Therefore, a multiple-baseline design across subjects rather than behaviours was employed (see Chapter III) - that is, the verbal challenge intervention was introduced to the different clients at one week intervals, following a minimum of five weeks of baseline. The measures employed in Experiment 3 were very similar to those used in Experiments 2(a) and (b). Experiment 3 introduces a second belief modification intervention - reality testing - which involved putting the delusions to empirical test (cf. the work of Beck, discussed in Chapter I). Reality testing was conducted in the cases of three of the six clients; in each case reality testing followed the verbal challenge intervention.

Method

Subjects

Clients who had held a delusional belief for the previous two or more years were referred by their psychiatrist and community psychiatric nurse for participation in the study. Six men took part, each of whom satisfied D.S.M. III criteria for schizophrenia (APA, 1980). At the time of the study all the clients were out-patients and had been on stable drug regimes for the past six months or more. The clients were aged between 28 and 42, with a mean age of 34 years. A brief summary of each client's psychiatric history and belief follows:

TD: Date of birth 14-6-55

TD was brought to the attention of the psychiatric services in 1980 with what was thought to be an insidious onset of schizophrenia. He was first admitted to hospital in February 1985 having run away from a rehabilitation centre. At this point TD was described as being preoccupied almost the whole time with an unbearable fear of the public and police, who he believed wanted to harm him for his imagined sexual offences. There was one subsequent admission to hospital in 1986.

At the onset of the present study TD was still preoccupied with delusional thoughts. Specifically he believed that his appearance was sinister and suspicious and that he was suspected of committing various criminal offences. He feared that these suspicions would be reported to either the police or other members of the public, who would take some form of reprisal or retribution. TD was unmarried and lived with his parents.

WH: date of birth 2-6-55

WH was first admitted to hospital in 1977. He believed that he was being persecuted by the British and Russian intelligence forces, who had interrogated him and subjected him to 'mental torture' because he had seen some top secret documents. There had been numerous readmissions. The delusion was still firmly fixed at the onset of the present study. WH was unmarried and lived alone.

JE: date of birth 11-11-45

JE had a long psychiatric history dating back to his late teens. There was also a long history of criminal offences, including shopbreaking, larceny, arson and indecent assault. JE was first admitted to the North Wales Hospital in 1979 presenting with what were described as clear schizophrenic symptoms. There was evidence of thought disorder and delusional ideas of possessing special powers and of being Elvis Presley.

At the onset of the current study the only residual delusional thinking concerned the belief that he was Elvis Presley. JE believed that when Elvis died in 1977 he took over JE's mind and body so that he was now Elvis. This transformation had been total, so that JE now had Elvis' voice and was privy to the information stored in Elvis' mind. JE was unmarried and lived in a hostel.

MM: date of birth 28-1-56

A long period of vagrancy and psychiatric disturbance had preceded MM's first admission to the North Wales Hospital in 1978. On his first admission MM made grandiose claims to possessing powers such as being able to change the weather and knowing in advance what people were going to say. The last of numerous re-admissions was in 1985.

At the onset of the present study MM was still claiming to have control over other people and events, such as being able to cause things to happen or be said on television simply by thinking them. MM was unmarried and lived in a hostel.

DR: date of birth 3-11-68

DR was first admitted to hospital in 1979 with delusions of grandeur and reference, claiming to be the 'key to history'. He believed that the radio and television communicated with him, and that this enabled him to contact people from the past and to change the course of history. There had been numerous readmissions since 1979.

At the onset of the study the delusional belief system was still completely fixed and remained the only psychiatric problem. DR was married and lived with his wife.

HM: date of birth 17-5-47

HM had first come to the attention of the psychiatric services in the late 1960's. He was hallucinating and had delusions of reference and persecution. It was not until much later (approximately 1982) that these symptoms were incorporated into one belief system: this was, that a man whom HM believed to be his father was controlling him telepathically via voices (auditory hallucinations). HM's 'father' also controlled others in similar ways, including; making disc jockeys on the radio refer constantly to HM, being responsible for HM receiving the wrong set of 'A' level results, and leading people to think that HM had experienced a nervous breakdown. HM believed that this persecution was all part of a larger plan to 'harden him to life' and produce a kind of evolutionary resilience which was then to be handed on to his children through his genes. HM was unmarried and lived alone.

Measures

The measures, which are summarised in Table 6.1, were the same as employed in Experiments 2(a) and 2(b). The only procedural variation in the way the measures were administered concerned the two clinical measures, the BDI and Symptom Checklist. These two measures were given during the final session of the baseline phase, at the final session of the intervention phase, and at each follow-up meeting.

Table 6.1. *A summary of the measures employed in Experiment 3 and when they were administered.*

Delusional Dimensions

CONVICTION - measured with PQ and % rating.

PREOCCUPATION - measured with PQ

ANXIETY - measured with PQ

Conviction, preoccupation and anxiety were measured at the close of every session throughout the study.

Measures of Susceptibility to Change

ACCOMMODATION - measured at the start of every session by asking whether anything had happened over the past week to change the belief.

REACTION TO HYPOTHETICAL CONTRADICTION - measured at weeks 2 and 4 of baseline by posing a plausible but contradictory occurrence and asking how it would affect the belief.

Clinical Measures of Change

BECK DEPRESSION INVENTORY & SYMPTOM CHECKLIST - measured at the final baseline session, the final session of the intervention, and at each follow-up.

External Validation

Assessments conducted following the final follow-up.

Experimental Design

The present study employed a multiple-baseline across six subjects. The principle is the same as in a multiple-baseline across behaviours: the difference is that the different behaviours belong to different people. Following a minimum five weeks of baseline the intervention was introduced at one week intervals to each subject in turn (see Figure 6.1).

Procedure

Unless stated otherwise, the procedure was the same as in Experiment 2(a) and 2(b).

Phase 1 : Preliminary Interviewing.

One and, in some cases, two, interviews were conducted with each client and these served the dual function of defining the belief to be modified, and of establishing rapport.

Phase 2 : Baseline.

Baselines of between 5 and ten sessions were conducted with each client. These interviews adhered to those guidelines laid down in the General Method.

Phase 3 : Verbal challenge.

In order to clarify further how the clients' evidence for their beliefs was challenged, there follows a summary of the discussion of the evidence TD rated as most important to his belief system. This occurrence took place when TD was in Preston attending a rehabilitation course. Whilst walking through the town centre one evening TD was stopped and questioned by the police. Over the subsequent week TD saw a number of different police cars. TD believed that the police questioned him because he looked 'odd and suspicious', and that his sinister appearance caused the police to place him under surveillance. This interpretation was countered by pointing out the following facts. First, TD stated that he had

'jumped' on seeing the police car; this may have accounted for the police stopping to talk to him. Secondly, the police did not ask TD where he lived or worked, but only where he had been that particular evening. Thirdly, immediately after the interview the police drove off and TD was absolutely certain that he had not been followed home. The experimenter concluded, therefore, that the police could not have placed TD under surveillance without knowing where he lived or worked. Moreover, not only was it not possible that the police had placed TD under surveillance, it was also implausible: if they had been so suspicious of this 'odd and sinister' character, they would surely simply have taken him in for further questioning or interviewed him far more extensively at the time.

When challenging the evidence for TD's belief, the experimenter made TD aware of the regulatory function of language. This was achieved by illustrating the way in which TD's interpretations of events were directed by his own core belief about his appearance. For example, when in Preston TD interpreted his being passed by police cars in town as evidence that he was under police surveillance. However, the experimenter pointed out to TD that to be passed by a police car in a large town was nothing unusual: TD agreed with the experimenter's suggestion that prior to going to Preston TD was passed by police cars just as frequently. Furthermore, the experimenter drew attention to TD's own observation that the drivers of those police cars that passed him in Preston did not appear to be looking at him. The experimenter suggested that TD's view that he was under surveillance was determined not by any salient features of the encounters themselves, but by his belief that he was of sinister appearance and suspected of crimes: this explained why prior to forming his belief about his appearance TD thought nothing of being passed by police cars.

To provide an illustration of the second stage of the verbal challenge, there follows a summary of the manner in which DR's belief that he was the 'key to history' was discussed. The essential feature of the argument was that DR's belief came about in reaction to and as a way of making sense of his experiences of

people hearing his thoughts ('I'd think of something and they'd copy it') and making reference to him ('I'd pick up a pint and John Wayne would say "He's picking up his pint" ').

To begin with, the experimenter highlighted instances of irrationality and inconsistency within DR's belief system. One example involved two claims made by DR that were contradictory. The first of these was that the government was instructing the medical profession to give DR medication in an attempt to subdue his ability to communicate with people from the past. DR justified this claim by stating that the government was afraid of what might happen if he was allowed to exercise his powers. DR explained that the government's fear was largely responsible for his remaining out of the public limelight. The second, and conflicting, claim was that at peak television viewing time Prince Charles had issued DR with a personal warning not to attempt to change the course of history. DR said that in his warning Prince Charles both referred to DR by name and supplied information on the nature of DR's abilities. The experimenter pointed out to DR the inconsistency inherent in these two claims, one of which described him and his power as unknown and the second of which meant inevitably that he was known to a large portion of the public. The experimenter also stated his opinion that if Prince Charles had issued such a warning it was inconceivable that no mention of it would have been made by the media.

Inspection of the case notes, together with DR's comments during the baseline phase, made it possible for the experimenter to formulate the following developmental account for the emergence of DR's belief. DR reported first experiencing people on the radio and television reading his mind and referring to him soon after the death of his father in a car accident and the break up of his first marriage. DR also reported meeting people who seemed to 'know what he was thinking'. DR stated initially believing that he was part of some kind of an elaborate game or trick. However, these experiences quickly became frightening and chaotic. DR reported forming his belief gradually in order to make sense of these new and disturbing experiences. The fact that people, including those on the radio and television, were able to

read his thoughts led DR to 'realize' that he could communicate messages to people on television and the radio simply by thinking whatever he wished them to know. The next 'realization' concerned the fact that many of these instances of mind reading, thought broadcasting and reference occurred on old films and songs made many years before. This suggested to DR that he was able to communicate with people from the past as well as from the present. This led DR finally to conclude that he therefore was able to change the course of history by passing on information to people in the past which would enable them to prevent or create particular outcomes. DR reported that he started to think of 'all the marvellous things' he could do, such as preventing people from dying. The experimenter put forward this developmental account as a way of demonstrating to DR that his belief might be understood as being both a reaction to and a way of making sense of his experiences of reference and thought broadcasting.

DR's experiences of reference and thought broadcasting were not challenged; nor was DR told that these behaviours were signs of 'schizophrenia'. He was re-assured that these experiences were 'real' - it was his interpretation of these experiences that was under scrutiny. Rather, it was suggested that these behaviours might be effects of a breakdown, possibly induced by the stress of his father's death and his divorce. The experimenter advised DR that reports of similar experiences were quite common. The experimenter observed that although for the individual concerned an experience of someone on the radio referring to him or her was indistinguishable from someone on television actually doing so, other people were able to make the distinction. For this reason the experimenter stressed that it was important not to dismiss the word of those people who told DR that they were unable to hear the things he heard, until all possible alternative interpretations of the experience had been considered. The experimenter described DR's belief about being the key to history as being one such interpretation. That is, the experimenter suggested that DR developed his belief gradually in an attempt to make sense of his experiences. DR stated that his quest for understanding was motivated by the high degree of fear and distress he was experiencing at the time. In the sense that DR's new

'understanding' lessened his confusion, the experimenter indicated that DR's belief might be thought of as functional. The experimenter added that DR's belief might be an aid to coping with the death of his father, and in this sense too might be viewed as functional.

This account was offered to DR as a plausible alternative interpretation of his experiences. The experimenter pointed out that within the context of DR's experiences his belief was understandable. However, given that there was an alternative explanation, it was necessary to weigh up the two in the light of the available evidence. The experimenter argued that the alternative interpretation put forward was both more plausible and supported better by the available evidence. To support this contention the experimenter drew DR's attention to a number of points, including the following. First, the multitude of occasions upon which DR had tried to change history without success went against his belief and offered support for the alternative. Second, further support for the alternative interpretation was provided by the multitude of people, including family and close friends, who over the years had said that they did not hear what DR claimed to have heard said on the television and radio. It seemed inconceivable, for instance, had DR's mother and sister also heard the television and radio talking to DR, that they would not have said so.

Phase 4: Reality testing.

Inevitably there would be some clients for whom the verbal challenge phase was not persuasive, and who would adhere to the delusion. In such cases the client and researcher collaborated to devise a simple test of the belief (c.f. Beck, 1967; Hole et al., 1979). For example, with MM, who maintained that he could tell what was going to be said on television before it was actually said, a video recording was put on 'pause' at prearranged times, and MM was then asked to say what was coming up next. The defining principle behind the reality testing was that the client agreed in advance that the chosen task was a genuine test of the belief.

It only proved possible to reality test the beliefs of three clients (JE, MM & DR); HM rejected his belief totally during the verbal challenge phase, and reality testing was not performed with TD and WH on the recommendation of their community psychiatric nurse and psychiatrist respectively.

Phase 5 : Follow-Up.

To assess for maintenance of behaviour change, one month, three month and six month follow-up meetings were conducted.

Phase 6 : Independent Assessment.

After the final follow-up, an independent clinical psychologist interviewed each of the six clients to assess his conviction in the delusional belief at that point in time and his observations on the study.

Results

(a) Belief Conviction

The primary measure of recovery from delusional thinking was degree of belief conviction. Figure 6.1 shows the percentage conviction scores for each client in the different phases of the study. Because percentage conviction score and the PQ conviction score correlated very closely (a Pearson's r of 0.99), the PQ conviction measure is not presented separately. During baseline sessions percentage conviction was extremely stable across all clients, with only DR showing any slight variation. Even though by the close of the first session of verbal challenge TD accepted that the events which had led to the formation his belief did not warrant such an interpretation, he still reported being 70% certain that his belief was true. (This is reminiscent of the debriefing studies reported in Chapter 2 where beliefs were maintained even after the initial evidence on which they were based had been discredited: e.g. Jennings, Lepper and Ross, 1980; Lepper, Ross and Lau, 1980). TD accounted for his relatively high degree of certainty in a belief he recognized had been formed on misinterpretation by stating that he had held the belief for so long that he thought that it would take time for him to change the way he thought. This said, even a thirty per cent reduction in belief conviction appeared to be beneficial; TD observed at the close of the first session of verbal challenge 'its made me feel better...its a bit of reassurance that I don't necessarily look sinister'. After the second session of verbal challenge, this doubt was increased still further, with TD rating the likelihood of his belief being true as only fifty-fifty and reporting that he was 'beginning to think differently now'. TD also reported being able to regulate his anxiety somewhat by reminding himself that he did not necessarily look sinister and suspicious. Conviction remained at the 50% level throughout the remaining verbal challenge and follow-up sessions.

In the case of WH, the conviction rating did not change for the duration of the study. During the verbal challenge phase the suggestion that other interpretations could be placed on WH's experiences was met with resistance and, occasionally, hostility: on one occasion WH expressed his opinion that the interviewer was the sort of bloke who if he had a machine gun would threaten and interrogate him! However, there was a change in belief content at the one month follow-up. Specifically, WH's belief became encapsulated, in much the same way as happened to BP's Amanda belief in Experiment 2(a). Even though WH still felt sure that the Russians and British had been persecuting him for over ten years, at the one month follow-up he stated that he thought it possible that the persecution may now have stopped, and at the three and six month follow-up stated that he was now sure of this. (This may have been in response to the verbal challenge, part of which involved pointing out that if the combined Russian and British intelligence forces had been "after him" for over ten years, they would surely have "got him" by now). Even though at the three and six month follow-ups WH said he no longer believed that he was still being persecuted, his conviction that he had been persecuted in the past remained at 100%, and in this sense WH completely refused to accept that his delusional belief system was false. For this reason, belief conviction for WH is shown at 100% on Figure 6.1 throughout the follow-up phase.

Verbal challenge initially produced a major reduction in the belief conviction of JE, followed by a fluctuation between total acceptance or rejection of the belief at week two of the verbal challenge. However, for the three remaining verbal challenge sessions belief conviction was 100%. It was only with the introduction of reality testing that conviction fell to 0% (i.e. that the belief was definitely false). The reality test agreed with JE was a series of related tasks aimed at proving that he was Elvis Presley. One of the tasks involved making tape recordings of JE singing and talking, and then asking ten people to listen to these two tapes and say which famous dead pop star they thought made the recordings. The third test, supplied by JE, was that he would write down the lyrics to any Presley song. Interestingly, on two of

the occasions when JE accepted that he was not Elvis (during the first session of reality testing and once during the first session of verbal challenge), he countered by saying that he therefore must be someone else, possibly Jim Reeves. This degree of accommodation was peculiar to JE, and was not repeated after the first session of reality testing. JE's rejection of his belief that he was Elvis was maintained throughout the follow-up period, during which JE actually performed some reality testing of his own. For instance, at the one month follow-up meeting JE said 'if I was Elvis I would be a millionaire' and 'if I was Elvis I would be in the States'.

With MM it was not until the reality testing stage that he expressed any doubt in his belief. The reality test, outlined earlier, was conducted at the first and third session of the reality testing phase: different video recordings were used at the two sittings. MM requested the second test having failed to predict even one of the ten key words on the first test, though to no avail - he also failed to identify even one of the 10 key words on the second test. In the course of the first session of reality testing MM seemed genuinely surprised that he was unable to predict what was said on a video recording, observing midway through the test 'I can't guarantee it'll work, because I'm not sure of it now'. For the remainder of the study conviction never again moved above the 50% level.

In the case of DR, verbal challenge initially had a very strong impact, and the client wondered aloud as to whether he could indeed change the course of history. He reported 'I don't know what to believe, it baffles me...one half of me is saying its got to be true, and the other half is saying it can't be done'. Reality testing did not improve upon the reduction in belief conviction recorded during the verbal challenge. The reality test was supplied by DR and was one he had wanted to perform for a number of years. It involved attempting to win the football pools by making a video recording on a Wednesday, and playing it back the following weekend whilst DR read out the football results. In this way DR planned to communicate the winning coupon numbers to the people on the video recording, who would thus know on the

Wednesday the results of the football matches to be played on the coming Saturday. The test was performed twice, using different video recordings: the first recording was of a conversation between the interviewer and the interviewer's brother, and the second recording was of DR talking to his wife. DR made both the decisions about how many times to conduct the test and who to include in the videos. DR was extremely open minded prior to making each attempt at winning the football pools, saying that if it did not work it would be proof that his belief was untrue. However, in spite of his open minded attitude prior to both tests, when each proved unsuccessful DR simply accommodated this by making minor changes to his belief system (e.g. that his mind had not been active). However, at the follow-up meetings DR's conviction ratings together with the following comments suggested that the doubt generated by the interventions was a long lasting one: 'Sometimes I think its impossible, but then it happens and I hear something and I believe' (one month follow-up); 'I still don't believe it can be done, its just impossible' (three month follow-up); and 'Its a possibility, just a possibility' (six month follow-up).

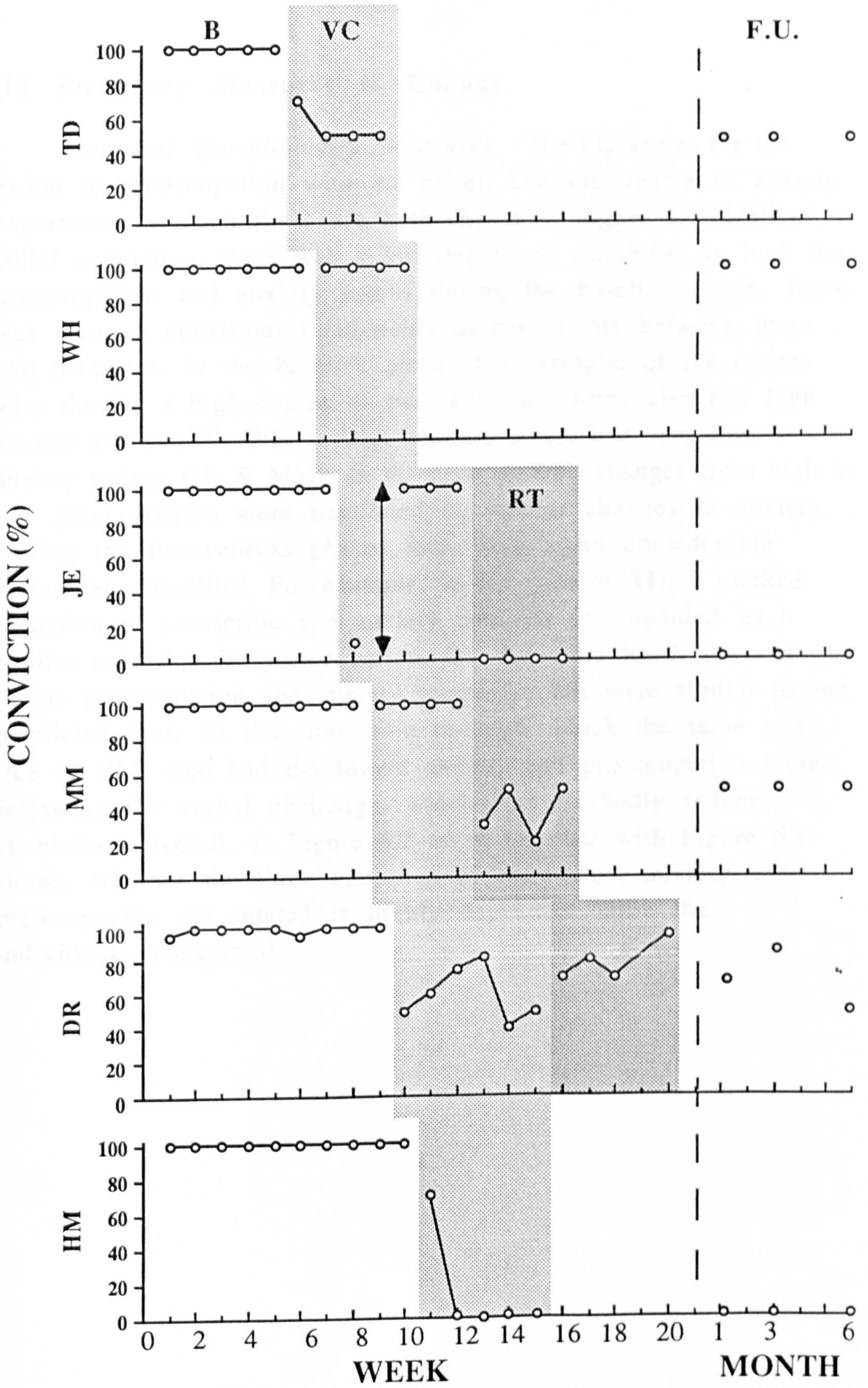
HM's conviction rating was unwavering throughout the ten week baseline phase. Towards the end of the first session of verbal challenge HM stated that he thought his belief 'highly unlikely', and added 'if I could drum those arguments into my head every day, it might even get me out of this'. However, rather as was the case with TD, when HM's degree of belief conviction was measured at the close of this session, he replied 'more' to each of the PQ conviction cards except 'almost definitely true' and gave a percentage conviction rating of 70%. One week later, at the second session of verbal challenge, HM gave a percentage conviction rating of only 1%, and stated that his beliefs were 'pure science fiction' and 'couldn't have been true'.

Percentage conviction at the close of the third session of verbal challenge, and indeed at all subsequent sessions, was 0%. During the third session of verbal challenge HM revealed an insight into the possibility of relapse, observing 'its a load of bloody rubbish, what I was thinking, a load of bloody rubbish...Whether it will come back or not when you've finished with me is another matter'. In fact, HM reported resisting the temptation to interpret infrequent hallucinations and references in a delusional manner over the follow-up period.

Figure 6.1.

Percentage conviction for the six clients during each phase of the study: baseline (B), verbal challenge (VC), reality testing (RT), and at follow-up (FU).

Note. The arrow at week 2 of the verbal challenge condition in the case of JE indicates that belief conviction vascillated between 0 and 100% certainty.



(b) Secondary Measures of Change

Personal Questionnaire Measures. The PQ scores for the extent of preoccupation with the belief, and the degree of anxiety experienced at such times are both shown in Figure 6.2. Unlike belief conviction, there was a fair degree of variability in both the preoccupation and anxiety scores during the baseline phase. There was also no consistent relationship across clients between these two measures. In the baseline phase, for example, of the clients who showed a high degree of preoccupation, some also had high anxiety scores (TD, WH & DR) whereas others had very low anxiety ratings (JE & MM). In the case of WH, changes from high to low preoccupation were paralleled by similar changes in anxiety. During the intervention phases there was again considerable individual variability. For example, in the case of TD, a marked reduction in conviction and anxiety was not accompanied by a similar reduction in preoccupation. On the other hand, the changes in the preoccupation and anxiety scores for DR were similar to and paralleled those in the conviction measure. Much the same was true of HM, who had the lowest anxiety and preoccupation scores following the verbal challenge, which also markedly reduced conviction. Overall, as Figure 6.2 taken together with Figure 6.1 shows, whether the three measures of conviction, anxiety and preoccupation are related is highly dependent upon the individuals concerned.

Figure 6.2. Preoccupation and anxiety scores for the six clients during each phase of the study: baseline (B), verbal challenge (VC), reality testing (RT), and at follow-up.

Note. Because both measures are retrospective, applying to behaviour in the week prior to when the measure was taken (see General Method), the shading to mark the introduction of the interventions appears one week later than in Figure 6.1.

While Figures 6.1 and 6.2 provide a detailed picture of changes in the three measures for individual clients throughout the study, Table 6.2 shows the results of an analysis of covariance between PQ measures for the group as a whole. Partial correlations were calculated which established the correlation coefficient between any two PQ scores while controlling for the third. Two sets of partial correlations were calculated, one of performance on baseline sessions only and the other of scores on all sessions. All partial correlations are shown in Table 6.2. Analyses of covariation were not calculated for individual clients because of the small number of sessions conducted in some cases.

Table 6.2. *Partial correlations of PQ scores for all clients during the baseline phase and for all sessions.*

	Baseline Sessions	All Sessions
Conviction & Preoccupation	-.137	.372 **
Conviction & Anxiety	-.085	.084
Preoccupation & Anxiety	.417 *	.389 **

* $p < 0.05$

** $p < 0.01$

Of the three correlations based solely on baseline performance, only preoccupation-anxiety reached significance, suggesting (i) that conviction was independent of both the amount of time spent preoccupied with the belief and the degree of anxiety experienced at such times, and (ii) that preoccupation and anxiety were linked. When all data points were taken together, both the preoccupation-anxiety and conviction-preoccupation correlations reached significance at the 1% level. Such summary statistics can, however, be misleading. For example, while there was an overall significant correlation between conviction and preoccupation, it would be a mistake to assume that this meant that the two measures always varied together; for at least two clients (TD & MM) the interventions produced a major reduction in belief conviction even though preoccupation remained constant. Again, although there was a significant correlation between anxiety and preoccupation across all sessions, some individuals (TD & JE) showed marked changes in one of the measures but not in the other.

Beck Depression Inventory. According to the severity of the symptom, each item on the B.D.I. is scored 0, 1, 2 or 3. A score of 18-24 constitutes mild depression, 25-29 moderate depression, and 30 and above severe depression. As is shown in Table 6.3, there was a downward trend in B.D.I. score over time and a Friedman's two way analysis of variance revealed this to be significant at the 1% level: $\chi^2 (4) = 21.6, p < .001$.

Table 6.3. Beck Depression Inventory scores before (PRE) and after (POST) the intervention, and at one month (1M FU), three month (3M FU) and six month (6M FU) follow-up.

Subject	PRE	POST	1M FU	3M FU	6M FU
TD	35	27	27	29	27
WH	18	17	8	5	7
JE	24	20	6	5	5
MM	1	0	0	0	0
DR	20	19	17	10	4
HM	19	14	17	2	3

Symptom Checklist. Results from the Symptom Checklist revealed that no client reported a new symptom during the study. The Symptom Checklist proved sensitive to the changes in belief conviction brought about by the intervention for five of the clients (TD, JE, MM, DR & HM). WH reported pre- and post- intervention that he believed people were still trying to harm him deliberately, but at the one month follow-up stated that he doubted this, and at the three and six month follow-up that he thought it was no longer the case.

(c) Measures of Susceptibility to Change

Accommodation. This measure was concerned with the extent to which clients spontaneously acknowledged events which disconfirmed their beliefs. During a total of 45 baseline interviews, no client recognized an external event which caused him either to reject his delusional belief, or to reduce his degree of belief conviction in that belief. However, following the introduction of the verbal challenge, TD reported one instance of disconfirmation, and HM reported experiencing disconfirmation at the start of the third and fourth sessions of the verbal challenge. For example, part of HM's belief system involved the notion that women in cafeterias showed a great deal of interest in him, even to the extent of coming to sit by him and crossing their legs when they believed him to be watching. At the beginning of the second session of verbal challenge, HM reported observing that in actual fact when he looked at women in the cafeteria, far from leading him on they looked away, and that when a woman did sit by him he looked around and saw that all the other tables were full. At the start of the third session of reality testing, MM also reported an experience of disconfirmation.

Reaction to Hypothetical Contradiction. This second measure of susceptibility to change was concerned with a person's potential for accommodation. A plausible but contradictory occurrence was posed, and the client asked how, if at all, his belief would change if

such an event took place. The instances of proposed hypothetical contradiction put forward to each client are as follows. TD was asked whether his belief would be altered in any way if a number of people were shown a film clip of him walking around a busy town centre (a situation in which he believed he appeared at his most sinister and suspicious) and when asked to choose adjectives to describe TD none of the people mentioned anything akin to sinister or suspicious. WH was asked whether his belief would be altered by a personal assurance from top ranking military officers that they had no interest in him, and an invitation to look at any dossiers the military might have on him. JE was asked whether his belief would be altered if Elvis Presley appeared on television and announced that he had stage managed his death in order to avoid the glare of the public eye. MM was asked whether his belief would be altered by his failing to demonstrate his abilities in a number of tests of his choosing. DR was asked whether his belief would be altered if he were given the chance to try to change history under conditions of his choosing and he failed. HM was asked whether his belief would be altered if the man whom he believed to be his father and behind his persecution were found to have died a number of years ago. As is shown in Table 6.4, when faced with hypothetical contradiction four of the six clients responded on at least one occasion that if such an occurrence did take place, then they would either lower their belief conviction, or reject their belief altogether. Two clients (WH & DR) flatly refused to acknowledge even the possibility of the disconfirming experience, and it was these two, particularly WH, whose conviction scores were affected least by the interventions (see Figure 6.1).

Table 6.4. Measures of reaction to hypothetical contradiction at week 2 and 4 of baseline.

	TD	WH	JE	MM	DR	HM
Week 2	2	0	3	3	0	3
Week 4	2	0	3	0	0	3

Key.

0 - denotes no change

1 - denotes change in belief content but not conviction

2 - denotes change in belief conviction but not content

3 - denotes rejection of the belief

(d) Validation of the Effect

The effect of the intervention was externally validated by an independent clinical psychologist, with interviews being conducted after the final follow-up.

Although his belief was still present to some extent, TD reported being able to understand that there were different ways of thinking about his ideas, and plausible explanations other than the delusion. When asked to quantify the extent of the change that had occurred as a consequence of the intervention, he reported a drop in belief conviction of between 50 and 60%. The clinician concluded that the intervention had given TD insight and coping skills which continued to be of benefit.

WH gave no suggestion that the intervention had led him to doubt his belief that he had been the subject of long-term persecution.

JE had continued untroubled by any delusional ideas up until the time of the assessment, and he reported that he was still able to make good use of the intervention by reminding himself of how it had disproved his belief.

MM explained to the clinician what the reality test had been and why it had led him to doubt his belief. When asked to quantify his current degree of belief conviction MM reported being 20% sure of his belief. MM also reported being more relaxed as a consequence of the intervention.

DR stated that the intervention had been helpful and, when asked to quantify this, reported a 30% drop in belief conviction; he added that what he had gained from the intervention helped him to cope still, although this varied with the intensity of his ideas.

HM continued untroubled by the delusional belief; he reported that the intervention had been very beneficial and that he was now better able to regulate his own thinking.

The independent assessment also revealed that, with the exception of WH, each client had found it beneficial to view his belief as having developed in response to particular life experiences.

In addition to this independent assessment, there was ongoing external validation for three of the six clients. TD's community psychiatric nurse reported a genuine doubt having arisen in the client as to the truth of his belief, and a new understanding that the belief was not based on reality, but on the way he approached and interpreted events. During the verbal challenge phase, DR's community psychiatric nurse reported that DR was less dogmatic when discussing the belief, and was far less anxious about the belief. The community nurse also reported that the intervention had provided DR with a new insight into the nature of his delusion. At a chance encounter some nine months after the close of the intervention the community nurse revealed that DR was still experiencing these benefits of participation in the present study. Lastly, HM observed to his community psychiatric nurse that the intervention had been very beneficial, and complained that someone should have done something like it sooner.

Discussion

In line with Experiments 2(a) and 2(b), the present study shows that very marked reductions in delusional belief conviction can be achieved in a relatively small number of sessions. In the present study beliefs which the clients had held for between two and eleven years were challenged over a small number of weekly sessions, ranging from four to 10 for individual clients. Although in almost every case belief conviction remained at 100% throughout the baseline sessions, five of the six clients showed substantial reductions in conviction by the end of the intervention phases and these improvements were maintained throughout the follow-up period of six months. In the case of two clients, JE and HM, the delusions were completely rejected.

The first stage of the intervention, the verbal challenge, produced a strong reduction in belief conviction in four of the six clients (TD, JE, DR & HM). Subsequently, reality testing reduced belief conviction in two (JE & MM) out of three clients. Clearly, within the context of the present study, no claims can be made for the effectiveness of reality testing per se, because it always followed the verbal challenge phase. In the case of JE the belief was rejected completely during reality testing, an effect which had appeared sporadically during the second session of the verbal challenge, when he had fluctuated between total acceptance or rejection of the belief. (As in Brett-Jones et al.'s 1987 study, only one client showed this 'all or nothing' pattern of belief conviction.) Reality testing was the phase in which MM produced the first reported doubt in his belief, whilst for DR it clearly did not improve upon the verbal challenge intervention.

Group correlational analyses were conducted on the PQ measures of conviction, anxiety and preoccupation, both for baseline sessions only, and for all sessions combined. The baseline correlations suggested that degree of conviction was independent of preoccupation, a finding also reported by Kendler et al. (1983) and Brett-Jones et al. (1987); they also suggested that conviction was independent of anxiety, but that anxiety and preoccupation were linked. When all sessions (i.e. both baseline and intervention) were analysed, there were significant correlations between anxiety and preoccupation, and between conviction and preoccupation. However, the merit of the single-symptom approach adopted in the present study is that it provided an ongoing and detailed picture of different aspects of each client's delusional thinking, which illuminates the analysis of group data and corrects any misleading impressions that the latter may give. Thus, these data for individual clients, presented in Figures 6.1 and 6.2, show a high degree of individual variation in the relationship between the three main belief measures and, moreover, provide strong evidence for a multidimensional view of delusions (Kendler et al., 1983). During the baseline phase conviction was very stable in all cases, even though there was much variability in preoccupation and anxiety. Furthermore, there was no consistent relationship among the measures; whilst for WH and DR, baseline preoccupation and anxiety scores were similar, with JE and MM, preoccupation was constantly scored at the maximum intensity level (5) and anxiety was constantly scored at the minimum level (0). Also, following the introduction of the intervention, there was no consistent pattern of change across the three measures. In some cases (JE & DR) conviction and preoccupation both declined during the verbal challenge phase, whereas in others (TD & MM) only conviction, but not preoccupation, was reduced.

In response to the accommodation test, no client reported an experience of disconfirmation during baseline interviews. As in Brett-Jones et al.'s study, the results on the accommodation measure suggest that such clients are not engaged actively in an ongoing process of reality testing their beliefs. It should be remembered, however, as Brett-Jones et al. have observed, that a failure to test a belief is a charge which could equally well be levelled at the non-clinical population (see Maher & Ross, 1984). In Hole et al.'s (1979) study both the clients who experienced a reduction in belief conviction subsequently came to view their beliefs less as absolute truths and more as hypotheses which they began to 'reality test'. In the present study three of the clients (TD, MM & HM) who experienced a reduction in belief conviction as a consequence of the intervention, subsequently began to observe disconfirmation, and, in the case of HM, to test the belief. It would thus appear that clients may only begin to 'reality test' their beliefs following an initial reduction in belief conviction.

Clearly a reduction in belief conviction is more likely to be maintained if the client begins to observe disconfirmation. However, maintenance may also be dependent on the way the client reacts to instances of confirmation - that is, to occurrences which prior to the intervention had been taken as evidence that the delusional belief was true. If a reduction in belief conviction is to be maintained, presumably the client must resist the temptation to interpret such instances as confirming. In the case study by Johnson, Ross and MASTRIA (1978: see Chapter III) the client resisted the temptation to place a delusional interpretation on events which prior to the intervention would have been seen in this way. Similarly, in the present study, with the exception of WH, when faced with situations which prior to the study were viewed as confirmatory, each client demonstrated an ability to keep such interpretations in check. For example, following the intervention, HM no longer interpreted infrequent auditory hallucinations and references as being instances of telepathic control by his father. Results from the present study suggested that maintenance may also be promoted when clients initially interpret events in a delusional fashion, but subsequently re-

evaluate them. For example, following the verbal challenge phase, TD reported being able to regulate his thinking and to maintain a healthy doubt in the belief most of the time. However, he was aware that he was not always able to prevent himself interpreting events in a delusional manner. When this did occur, he was able to subsequently re-interpret the experience and re-affirm his doubts. DR reported a similar procedure for keeping delusional thoughts in check.

The RTHC measure revealed that when actually confronted with an instance of hypothetical contradiction, on at least one occasion four of the six clients said it would lead them either to lessen their belief conviction or reject the belief altogether. This finding would seem to suggest that whilst these four clients did have the potential to accommodate contradiction, this was not manifested in their everyday lives, as evidenced by their performance on the accommodation test. Brett-Jones et al. reported that 'those subjects who ultimately entirely rejected their delusional beliefs dealt with hypothetical contradiction in a more rational way than those who did not', and this led them to speculate that RTHC might be of some value in predicting the success of attempts at belief modification (p.261). The present study offered tentative support for this proposition. The four clients (TD, JE, MM & HM) who were most responsive to hypothetical contradiction were also the most sensitive to the interventions, whereas the two clients whose conviction scores were affected least by the interventions (WH and DR) both flatly denied even the possibility of an instance of disconfirmation.

The two clinical measures (the B.D.I. and Symptom Checklist) were included to assess for possible side effects of the loss or partial loss of a delusional belief. The scores on the B.D.I., suggest that the weakening of a deluded belief has a general beneficial impact, and this would tally with the association found by Milton et al. (1979) between a fall in strength of delusions and a 'worthwhile reduction in overall psychiatric disturbance' (p. 129). It should be noted that the B.D.I. score also went down for WH, for whom the intervention was seemingly ineffective. However, the main reduction in his B.D.I. score occurred at the one month

follow-up, which was also when he first doubted that he was still being persecuted. It is quite possible that this new found doubt was instrumental in reducing the BDI score. The results of the Symptom Checklist for all six clients, though non-diagnostic, offered no inkling that any form of 'symptom replacement' followed the weakening or loss of a delusional belief.

One obvious question to be asked is why the modification procedure was effective. The independent assessment revealed that a good rapport had been established between the interviewer and the clients, and this may have been valuable in limiting psychological reactance (Brehm, 1966). However, the assessment also revealed that the five clients whose belief conviction had fallen during the intervention phase found it beneficial to see their beliefs as having arisen out of their life experiences, and in this sense being an 'understandable reaction'. In this respect, the intervention emphasised the extent to which the client was like other people, rather than someone set apart by a 'mental illness'. Conceptually, this approach was consistent with the notion of a continuum function (Strauss, 1969), and also with the view of those, like Bleuler and Bleuler (1986), who have argued that schizophrenic symptoms may be understood in terms of the client's life experiences.

Perhaps most important of all, both the follow-up meetings and the independent assessment revealed that, with the exception of WH, the intervention left each of the clients better able to cope with delusional ideas which recurred after the close of the intervention. A similar finding was reported in Experiment 2(a) and 2(b). These findings suggest that, with assistance, such clients can come to regulate their own thinking, and this is consistent with the growing literature on the role of language in guiding behaviour within the normal and clinical populations (e.g. Vygotsky, 1962; Abramson, Seligman and Teasdale, 1978).

Experiment 3 suggested that those behaviours exhibited by BP and BG in Experiment 2(a) and (b) respectively were not atypical. The study also went some way towards delineating the parameters of the effectiveness of the verbal challenge

intervention. Moreover, in reality testing, Experiment 3 provided an intervention which seemed to be most effective in those cases where the verbal challenge was at its weakest. However, because in all three cases reality testing followed the verbal challenge, it was not possible within the context of Experiment 3 to determine how much the success of reality testing was due to the clients prior exposure to the verbal challenge. In order to address this issue a final experiment was conducted where the reality testing intervention preceded the verbal challenge.

CHAPTER VII

THE MEASUREMENT AND MODIFICATION OF DELUSIONAL BELIEFS: EXPERIMENT 4.

Introduction

In Experiment 3 the effects of the verbal challenge and reality testing interventions were assessed on a number of different delusional dimensions. The modification procedure produced a reduction in the belief conviction of five out of the six clients, two of whom rejected their beliefs entirely. Of these five clients, three received only the verbal challenge and three received both the verbal challenge and reality testing. In the cases of two of the three clients who received the reality testing intervention, conviction scores recorded during the reality testing phase were lower than those recorded in the preceding verbal challenge phase. However, because reality testing followed the verbal challenge intervention, these effects could not be attributed to reality testing per se. Therefore, in the present study the reality testing intervention was introduced before the verbal challenge intervention. Otherwise the procedure and measures employed in Experiment 4 were very similar to those employed in Experiments 2(a), 2(b) and 3.

Method

Subjects

Clients were referred jointly by their psychiatrist and community psychiatric nurse on the following criteria: (i) that they had held a delusional belief for the previous two or more years (ii) that they had been on a stable drug regime for the past six months or more (iii) that they were out patients and (iv) that they satisfied DSM III criteria for schizophrenia. Four clients took part in the study, three females and one male. The clients were aged between 35 and 70, with a mean age of 51 years four months. There follows a brief summary of each client's psychiatric history and belief:

HJ: date of birth 22-5-32

HJ, who had a psychiatric history dating back over 30 years, was divorced and lived in a hostel. For the past two and a half years she believed that she was being persecuted by an unknown man, who was intent on killing her. The belief was reinforced frequently by auditory hallucinations to this effect. For example, the voices told HJ the name of her persecutor and often described the manner in which he proposed to kill her. The belief was also supported by evidence not supplied by the voices. Thus, for instance, on one occasion HJ saw a man in a parked car opposite the hostel where she lived; HJ believed that the man was her persecutor waiting for her to leave the hostel before attempting to kill her. At the time of the present study HJ's delusion and her experience of auditory hallucinations remained the only psychiatric problems.

LJ: date of birth 24-4-45

LJ was first admitted to hospital in 1976, just a few weeks after the birth of her second son. There had been numerous re-admissions. In 1986 LJ divorced her husband, who has been described as being of a possible psychotic disposition, since when she has looked after her two sons alone. It was LJ's long-held intention to commit suicide when her two boys were both old enough to look after themselves. This plan was motivated by her

delusional belief that she was an evil person who contaminated others. There was evidence to suggest that LJ's husband was instrumental in the formation of her belief.

In 1987 LJ reported hearing auditory hallucinations commanding her to shave off her eyebrows and hair and to keep her hair in a drawer. In addition the voices instructed LJ to cut her scalp with razor blades, which she also did. LJ viewed these deeds as acts of preliminary punishment for her evil nature; the final punishment was to be her suicide, which she hinted would be preceded by similar acts of self-injury. LJ stated that she had not heard any voices over the 12 months prior to the onset of the present study, at which time the major clinical problem, other than LJ's suicidal intent, was her delusional belief that she was evil and harmful to others.

CE: date of birth 13-11-17

CE believed that a health worker who used to visit her - Mr F - was sending noxious and poisonous gases through the walls and fireplace into her end-of-terrace home. Although Mr F lived and worked some distance away, CE believed that he spent the majority of his time in the adjoining house persecuting her, to the neglect of both his family and work. CE had never actually seen Mr F, or indeed any stranger, going into her neighbour's house; she believed he must enter surreptitiously via the back of the house. CE claimed that Mr F used some sort of heavy iron machine to pump the gases through into her home, which she reported having heard being moved around. The smells occurred often when her next door neighbours were out, which led CE to conclude that they were not involved directly in her persecution: she presumed that her neighbours were paid a fee for the use of their premises. The smells came at all times of day and night and could last for a number of hours at a time. Because Mr F spent so much of his time persecuting her, CE felt sure that he must be receiving payment. However, she had no idea who might be paying him or why she was being persecuted. Although at the onset of the present study CE's delusion was the only psychiatric problem, there were associated behavioural problems. For example, CE often harrassed her

neighbours when the gases bothered her most, and sometimes would even telephone the police.

EE : date of birth 5-6-52

EE's psychiatric history went back 9 years, beginning soon after he left a teacher training course prematurely. At the time EE presented with paranoid ideas about being persecuted by certain lecturers from his old University. There were also delusions of mind reading and reference, but these were subsumed by the delusion of persecution.

EE reported that his persecution began as an undergraduate when lecturers in his department read his mind and discovered that he was 'immature' and 'impulsive'. EE claimed that on the basis of this assessment, his lecturers gave him a poorer degree class than he deserved. EE believed that since his graduation the lecturers had been going to great lengths in order to prevent him from finding employment, even to the extent of having him fired from a teaching training course after only a few weeks. EE contended that the lecturers would continue to prevent him from finding employment until such time as they decided that he had matured sufficiently, at which point they would help him to find suitable employment. EE stated that in order to carry out their plan, the lecturers were having him monitored at his family shop where he worked frequently - that is, they were sending people into the shop to check up on him. Thus, when working in the family shop EE viewed many articulate customers whom he did not know as 'spys': many times in the past he had shouted and sworn at those customers whom he suspected of being sent by the University. The belief was still fixed at the start of the current study. Often EE expressed suicidal intent - this was linked in part to his delusion and in part to his general malaise.

Measures

With the exception of the independent assessments, the measures were employed in the manner described in Experiment 3 and summarised in Table 6.1. In the present study the independent assessments were ongoing. Each client was interviewed both during the baseline phase and soon after the final session of the intervention phase. However, there was some degree of variation in the number of additional assessments conducted with each client. In the case of one client (EE) the ongoing validation was supplied by his mother. Because this marked a departure from the manner in which assessments were conducted for all other clients in Experiments 2(a), 2(b), 3 and 4, in addition to the validation from his mother an independent assessment was conducted following the final follow-up meeting. (Precise details of the independent assessments conducted with each client are presented in the results section).

Experimental Design

A multiple-baseline design across four subjects was employed. Reality testing was introduced to the four clients at one week intervals following a minimum five weeks of baseline.

Procedure

Interviews lasting approximately one hour were conducted weekly.

Phase 1. Preliminary Interviewing.

In order to gain a clear picture of the belief to be modified and to establish rapport one and, in some cases, two interviews were conducted prior to the onset of the baseline interviews.

Phase 2. Baseline.

Baselines of between five and eight weeks per client were conducted. Baseline interviews adhered to the guidelines presented in the General Method.

Phase 3. Reality testing.

As in Experiment 3 the client and researcher collaborated to devise a simple test of the belief: in each case the client agreed in advance that the chosen task was a genuine test of the belief. For example, in the case of HJ the reality test involved her wearing ear muffs to determine whether she was still able to hear the voices. HJ predicted that she would not be able to do so because the voices were coming from other people, whereas the experimenter suggested that HJ would still hear the voices because they were her own thoughts. In fact HJ was still able to hear the voices even with the ear muffs on.

The reality test agreed upon with LJ was to discover whether those people whom she believed she affected adversely concurred with this opinion and whether they felt that LJ was an evil person. To begin with LJ was asked to specify what she understood by the term evil. The resultant five-point definition was presented to those people whom LJ felt she affected adversely and would classify her as evil according to her definition, to see if they would indeed do so. Not one of the five people tested classified LJ as evil. Each stated independently that LJ did satisfy one criterion out of the five - occasionally having bad thoughts about people - but that in their opinion this was true of most people and was not one of the hallmarks of an evil person. (The reality test conducted with LJ was constructed with the help of a clinical psychologist.)

In the case of CE the reality test involved a meeting between CE and Mr F, with the experimenter present. CE predicted that because of his guilt Mr F would not agree to the meeting, or if he did would not attend. When pressed, CE stated that if Mr F could be persuaded to attend he would be unable to account for his actions. The experimenter predicted that not only would Mr F attend the meeting, but would also be able to demonstrate that he was not persecuting her. Prior to the meeting the experimenter kept a record of those times at which CE reported smelling the gases; Mr F kept a record of his actions at these times. At the meeting Mr F presented CE with his account for his actions, and made CE aware of the number of people, including the experimenter, who would

confirm that Mr F could not have been in her neighbour's house at the times she claimed.

In the case of EE the agreed reality test was that the experimenter should meet with the spouse of one of the key persecutors and seek to ascertain whether EE was being persecuted. The spouse, who had come across EE in a professional capacity at hospital, was familiar with the nature of EE's belief about her husband. (It should be noted that the husband declined to meet with EE in person). EE stated that an assurance from the spouse that the lecturers were not persecuting him would be sufficient to make him doubt the truth of his belief. Following the meeting the experimenter reported back to EE that: (i) when attending University EE was held in high regard by the lecturers, who felt that he had not done himself full justice in his final examinations, (ii) they had done all they possibly could to help EE to find employment subsequent to his graduating from University, and (iii) they most assuredly were not having him monitored and did not know that his family had a shop.

Phase 4. Verbal challenge.

The verbal challenge intervention was as described in Experiments 2(a). Initially the challenge was restricted to the evidence for the belief, which was discussed in inverse order of importance to the belief system. The following discussion details the argument put forward to challenge LJ's interpretation of the piece of evidence she rated as most important to her belief system. This was that she had done something awful to her husband to make him behave in an unkind and cruel way towards her. In this way LJ interpreted his cruelty towards her as proof that she was evil and harmful to others. The experimenter made the following points in order to combat JL's interpretation of her husband's behaviour. First, prior to marrying, LJ and her husband had courted for seven years; throughout their courtship his behaviour had always been kind and there had been no indication of the cruelty that was to come later. Second, his behaviour towards her changed virtually as soon as they were married. Third, LJ's parents had expressed their opinion that she had actually been affected

adversely by her husband. Fourth, in the opinion of friends, family and health workers, it was he and not she who was an 'evil' person and had a harmful effect on his family. On the basis of this evidence the experimenter concluded that whatever it was which had caused the sudden change in her husband's behaviour, it was not that LJ had affected him adversely. The experimenter supported this claim by observing that if LJ were an evil and harmful person this would surely have manifested itself during their seven years of courtship. Equally, there had been insufficient time following the marriage for LJ to have affected him in such a way as to have justified his changed behaviour.

When discussing the evidence for each client's belief the experimenter made clear the way in which beliefs lead people to interpret events in particular ways. In each case this point was made first by explaining that this was true for most people, and second, demonstrating the way in which the client's own belief directed his or her behaviour. For example, CE reported that Mr F sent the gases through into her home with a heavy iron machine of some kind. CE based her claim on the fact that she occasionally heard what sounded like a heavy metal object being dragged around. However, as the experimenter observed, the 'machine' was moved only rarely, even though the source of the gas switched often: indeed, even though CE stated that the gases were pumped through frequently from the ground floor of her neighbour's house, she only ever heard the 'machine' in her neighbour's upstairs bedroom. Moreover, not only did the gas come through often in the absence of CE hearing the machine being moved, but on several occasions CE heard the machine being moved in the absence of any gas. Therefore, the experimenter suggested that it was CE's core belief which led her to believe that there was a machine next door, rather than any good evidence.

Having dealt with the evidence for the belief the discussion was moved on to challenge the belief itself. There follows a summary of the way in which EE's belief that he was being persecuted was challenged: as before, the essential feature of the argument was that EE's belief came about in reaction to and as a way of making sense of particular experiences. To pave the way

for this discussion, a short description of the development of EE's belief - drawn from case notes, discussion with professionals and EE's own comments - is presented.

Apart from feeling disappointed by his class of degree, EE experienced no paranoid ideas about his lecturers whilst actually attending University. Following graduation EE went to Rhodesia for just over two years as a teacher. Whilst in Rhodesia EE was advised that his career prospects would be enhanced if he acquired a recognized teaching qualification, so he returned to England to join a post-graduate teacher training course. However, after less than one-month on the course EE appeared to have a breakdown and was asked to leave the course. Although EE said he could remember shouting at the children until his throat was sore, he felt that he had been dismissed unfairly and had not been given an adequate chance to prove himself. The development of his paranoid belief about the University staff began at this point.

Challenging the belief started with a discussion of those aspects of the belief which were internally inconsistent or irrational: two examples of this are given. First, it was pointed out that EE's spell as a teacher in Rhodesia was inconsistent with his belief. EE stated that on leaving to take up the post in Rhodesia he had no intention of returning to Britain. Furthermore, he felt absolutely certain that the staff at his University had played no part in his decision to return to Britain. On his application form for the job in Rhodesia EE gave the names of two of his University lecturers as referees. Thus, these two members of staff had actually been instrumental in EE getting the job and leaving the country: yet subsequently it was these two lecturers in particular who EE believed were at the heart of his persecution. Therefore, EE's move to Rhodesia was totally inconsistent with his belief. It made no sense for the two main protagonists in EE's persecution - people who were intent supposedly on preventing him from finding employment until their close monitoring of him revealed sufficient emotional development - to have assisted him to leave the country to work, possibly for good. (A similar argument was forwarded in relation to EE's entry to teacher training, where again a reference was sought from the University). A second example of irrationality

concerned the fact that for the entire three years EE spent in close contact with his lecturers he remained blissfully unaware of their special interest in him. By his own admission, at no point during his degree course did EE have the slightest inkling that lecturers were reading his mind or that they viewed him as 'impulsive' and 'immature'. At the time EE felt that his relationship with his lecturers was mutually satisfactory; only almost three years later did he 'realize' that this impression was mistaken.

The second stage of challenging the belief consisted of showing that there was an alternative explanation for the client's experiences. In the case of EE, this involved interpreting his belief about the University staff as a reaction to and way of making sense of a number of disappointing and distressing experiences. A developmental account for the formation of EE's belief was put forward in support of this alternative. EE admitted to having been under a considerable strain at the time he entered teacher training: his lack of an adequate social life and his continued failure to find a girlfriend had preyed on his mind over a number of years. It was argued that at the time he entered teacher training he was under a considerable mental strain and that this appeared to have affected his performance teaching. This was by far the most plausible explanation for his leaving the teacher training course. It might be argued that those people in charge of the course could have been more understanding and that they might have made allowances for him, but this was nothing to do with his old University lecturers. EE first developed his ideas following his premature departure from the course - a period he described as one of great anger and distress - in order to explain why he had 'not been given a fair crack of the whip' at teacher training. He described a period of confusion and anger, before he realized why he had been dismissed - that his old University staff had written to the course to have him sacked because they felt that he was too 'immature' and 'impulsive'. This interest came to be seen as dating right back to when EE was a student, when the staff read his mind and first discovered his shortcomings. This explained why he was awarded a poor degree class. EE's subsequent long-term failure to find employment was interpreted in the same way. The final piece in the jigsaw came later, when EE came to view chance encounters with members of

the University staff in the family shop and elsewhere as instances of spying. Subsequently this generalised to include all articulate people who came into the shop. (It was emphasized that there was nothing 'abnormal' in a strongly held belief directing behaviour in this way.)

This account was forwarded as a plausible alternative way of interpreting EE's belief, not as a discovery, but as an attempt to make sense of his experiences. The experimenter suggested that given EE's level of anger and confusion at the time, his belief had been an understandable reaction. Indeed, it was pointed out that many people formed similar beliefs to account for long-term disappointment and stress. The feature common to these beliefs was that the responsibility for the situation was externalized or projected onto others. In this sense EE's belief was not only understandable but also functional. In viewing bad events as reflecting not personal failings but the failings of others, the belief helped protect the individual's ego or self-esteem. Thus, unacceptable thoughts were denied and projected outwards: it was suggested that EE's belief that the University staff viewed him as 'immature' and 'impulsive' might be an example of such denial and projection. The belief could thus be seen as an attempt to make sense of particular circumstances which was motivated by a psychological need to protect one's self-esteem. It should be pointed out that the aim of this discussion was not to persuade EE that everything was therefore his fault! Rather it was to offer him a way of seeing his belief as a functional attempt to account for his experiences. It was pointed out that it made no more sense to say that the disappointments EE had experienced were his fault any more than it did to state that they were were the fault of the lecturers - but if EE had felt, however explicitly, that they were his fault then it was functional to project the blame elsewhere.

Having put forward the alternative interpretation of the belief, the final stage of the verbal challenge involved arguing that the available evidence offered strong support for the alternative. This included drawing attention to: (i) the major flaws inherent in the belief, such as the move to Rhodesia, and (ii) the unanswered question of why the University staff should want to expend so

much time and energy on only one of many ex-students. (It is interesting that EE had not developed any grandiose ideation to account for this point. It might be expected that he would have interpreted the University's interest as reflecting a knowledge of some unique or important aspect of his character or destiny.) The experimenter also observed that many beliefs formed following similar breakdowns shared common characteristics. For instance, the belief was often formed during a period of withdrawal and anger: during this period the individual often re-constitutes his or her environment and experiences in the light of the new belief. So, for example, EE re-interpreted his experiences at University in just this way. As stated, the beliefs often involved projection. Another feature seen frequently in such beliefs was that incidental occurrences and events were of special significance to the individual: EE himself reported feeling that the way certain people walked past the family shop revealed that they too viewed him as 'immature'. The idea that people could read one's mind was identified as another feature reported commonly.

Phase 5. Follow-Up.

To assess for maintenance of behaviour change one month, three month and six month follow-up meetings were conducted. At these sessions all the measures were administered (with the exception of RTHC) in the order and manner described earlier.

Results.

(a) Belief Conviction

The two interventions were designed primarily to reduce the client's degree of belief conviction - the major measure of 'recovery' from delusional thinking. Figure 1 shows each client's percentage conviction scores for the entire study. Because the percentage conviction scores correlated very closely with the PQ conviction scores (a Pearson's r of 0.98) the PQ conviction measure is not presented separately. In the case of HJ the reality testing intervention had no observable effect on degree of belief conviction, which remained at the baseline level of 100% certainty. With the introduction of the verbal challenge intervention at week 8, conviction fell dramatically to only 20%. However, over the next two sessions of verbal challenge belief conviction rose to 50%: HJ said at session 10 'But the people seem so real and they say such terrible things to me sometimes'. At week 11, the fourth week of the verbal challenge phase, conviction fell again, this time to 0% (i.e. the belief was definitely false). At this session HJ said of her voices 'I'm not believing them...I think you've helped me up to now'. Although there was another climb in conviction over the two subsequent sessions, belief conviction was rated 0% at the final two sessions of verbal challenge. Maintenance at follow-up was good, with conviction never being rated more than 30% sure that the belief was true.

During baseline, LJ's conviction score fluctuated between 80 and 100% certainty. With the introduction of reality testing, conviction plummeted to 0%; at the close of the first session of reality testing LJ stated 'at the moment I don't feel I'm evil at all...I feel like a normal person'. Although conviction rose slightly to 20% at weeks 2 and 3 of reality testing, LJ still appeared to be highly swayed by the reality test: at the third session of reality testing she stated 'I seem to be very clear in my thoughts just recently...I think I am getting quite well'. However, at the final session of the reality testing phase (week 10) conviction returned to the baseline rate of

80%. With the introduction of the verbal challenge condition conviction once again fell steeply (week 11) and subsequently rose (week 12). Over the following three sessions of verbal challenge conviction fell steadily, and the intervention phase was concluded following two consecutive sessions when conviction was rated at 0% (i.e. the belief was definitely false). Maintenance at follow-up was good.

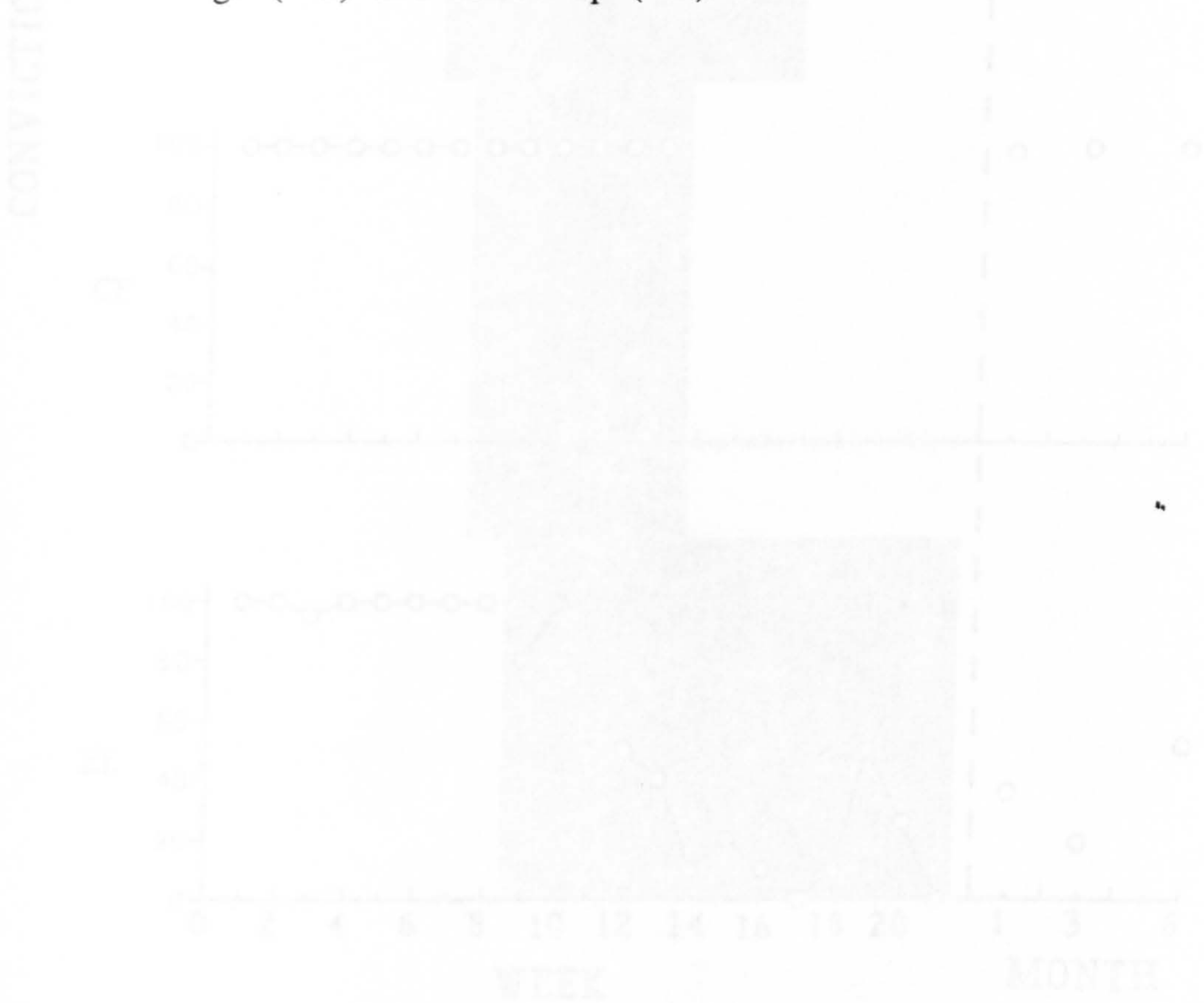
In the case of CE neither reality testing nor the verbal challenge had any observable effect on belief conviction, which did not waver during the entire study. However, reality testing did produce a change in belief content: at the first session of reality testing CE accepted that Mr F was not persecuting her, but still maintained that someone most definitely was. By the second session of reality testing CE's position changed again - she now stated that Mr F was persecuting her, but that he had a partner with whom he shared the burden and this was why he was able to account for his actions at times when the gases came through. At the second session of reality testing CE said of Mr F's proclamation of his innocence the week before 'its all lies'. Midway through the verbal challenge CE made one final modification to her belief content. She stated that although in the past Mr F had been her sole persecutor, someone else had taken over and he had not been persecuting her for some months now. CE's conviction remained at 100% throughout the six month follow-up period, four weeks of which were spent in hospital.

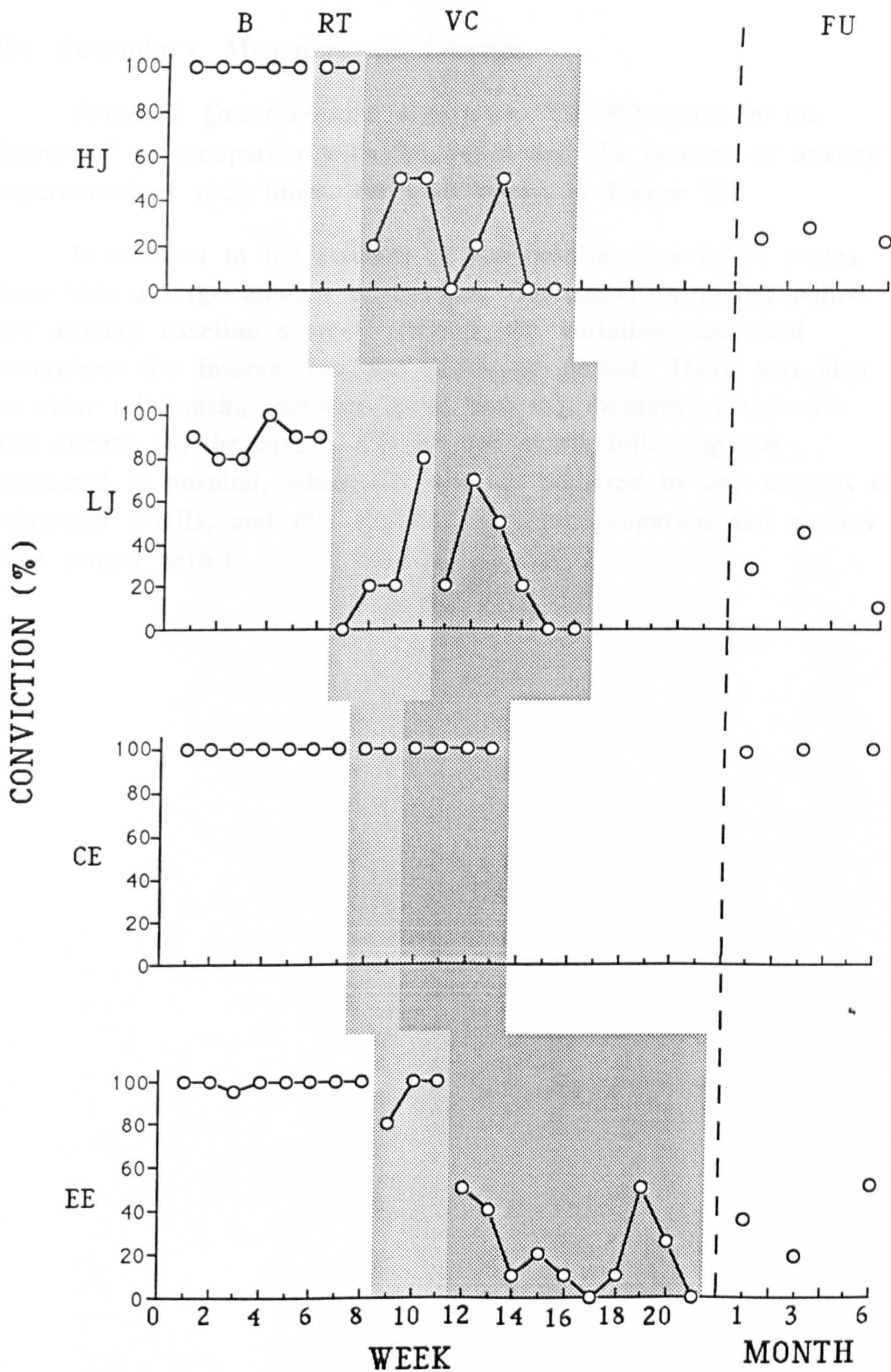
In the case of EE the baseline conviction scores were stable, the only slight variation occurring at week 3. The first session of reality testing produced a slight drop in belief conviction to 80% certainty, EE saying 'I have got a few doubts, genuinely...but I only half believe them'. The reduction in belief conviction was not maintained over the two remaining sessions of reality testing at which conviction was rated at 100%: at week 10 EE said of the reality test 'I don't believe them'. With the introduction of the verbal challenge condition belief conviction fell to 50%, and remained at low levels for the subsequent verbal challenge and follow-up meetings. At weeks 17 and 21 EE rejected his belief completely. Typical verbalizations during this period were: 'Your's

is the right answer to things' (week 15) and 'It's false, what I believe is false'. EE also displayed insight into the link between his level of conviction and general affective state; at week 18 he stated 'I believe your explanation...Sometimes I don't, though, when I'm feeling low'. Indeed, at week 19 when conviction rose to 50% certainty, EE reported having had a 'terrible' week during which he had felt suicidal. At the follow-up meetings conviction was never higher than 50% certain of the belief.

Figure 7.1.

Percentage conviction scores for the four clients (HJ, LJ, CE and EE) during each phase of the study: baseline (B), reality testing (RT), verbal challenge (VC) and follow-up (FU).





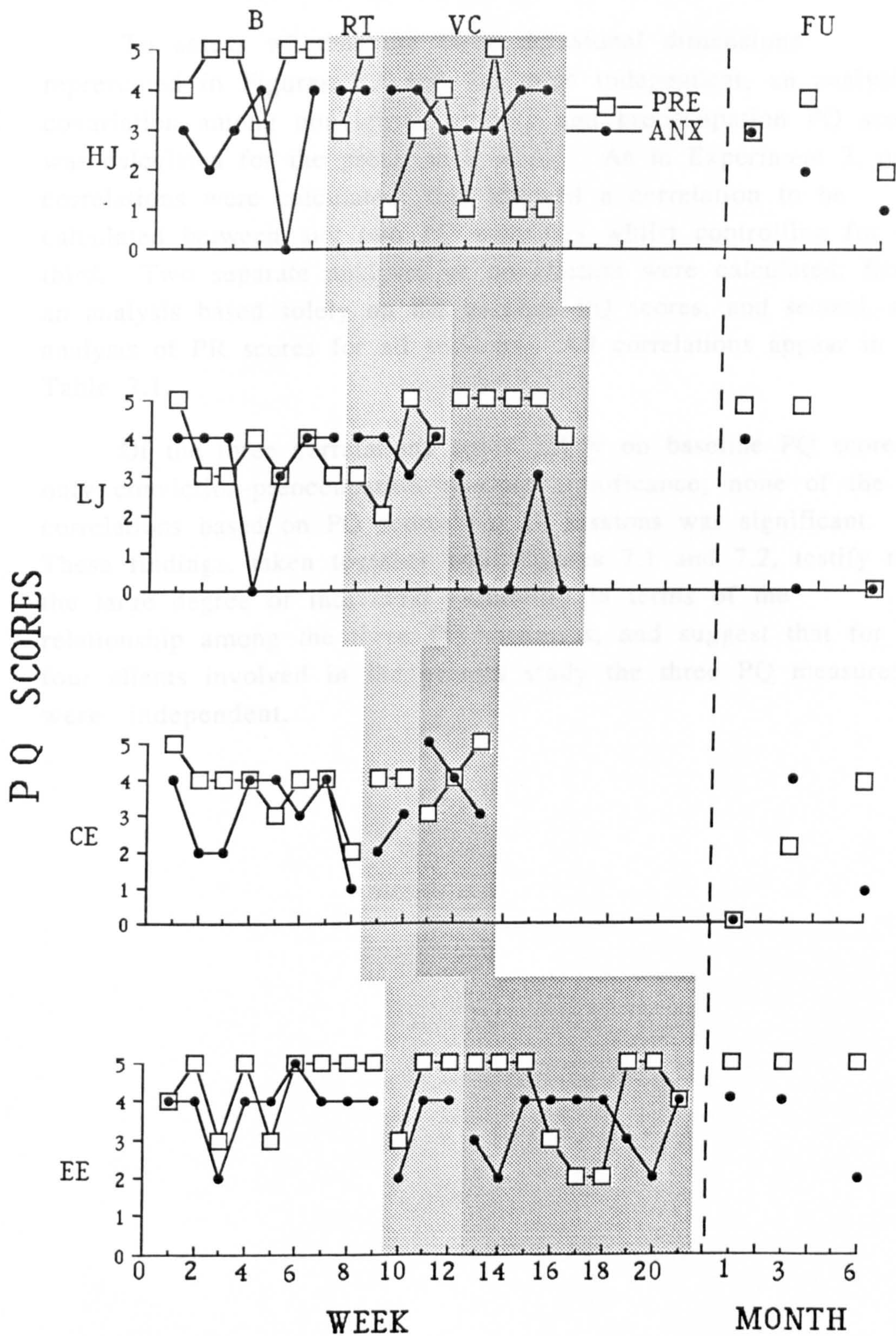
(b) Secondary Measures of Change

Personal Questionnaire Measures. The PQ scores for the degree of preoccupation with the belief and the amount of anxiety experienced at such times, are both shown in Figure 7.2.

In contrast to the stability of the baseline conviction scores, there was a large amount of baseline fluctuation in preoccupation and anxiety baseline scores - indeed, the variation continued throughout the intervention and follow-up period. There was also no clear relationship between these two PQ measures across the four clients. (In the case of CE the one month follow-up was conducted in hospital, where CE was not bothered by any noxious or poisonous smells, and this explains why preoccupation and anxiety were scored zero.)

Figure 7.2.

Preoccupation (PRE) and anxiety (ANX) scores for the four clients (HJ, LJ, CE and EE) during each phase of the study: baseline (B), reality testing (RT), verbal challenge (VC) and follow-up (FU).



To assess whether the three delusional dimensions represented in Figures 7.1 and 7.2 were independent, an analysis of covariation among conviction, anxiety and preoccupation PQ scores was calculated for the group as a whole. As in Experiment 3, partial correlations were calculated; this allowed a correlation to be calculated between any two PQ measures whilst controlling for the third. Two separate analyses of covariation were calculated; first, an analysis based solely on the baseline PQ scores, and second, an analysis of PR scores for all sessions. All correlations appear in Table 7.1.

Of the three correlations based solely on baseline PQ scores only conviction-preoccupation reached significance; none of the correlations based on PQ scores for all sessions was significant. These findings, taken together with Figures 7.1 and 7.2, testify to the large degree of individual variability in terms of the relationship among the three PQ measures, and suggest that for the four clients involved in the present study the three PQ measures were independent.

Table 7.1. *Partial correlations of PQ scores for all clients during the baseline phase and for all sessions.*

	Baseline Sessions	All Sessions
Conviction & Preoccupation	.420*	.205
Conviction & Anxiety	-.099	.008
Preoccupation & Anxiety	.013	.033

* $p < .05$

Beck Depression Inventory. According to the severity of the symptom, each item on the BDI is scored 0, 1, 2 or 3. A score of 18 and above constitutes mild depression, 25 and above moderate depression, and 30 and above severe depression. As is shown in Table 7.2, for three of the four clients there was a downward trend in BDI score over time, and a Friedman's analysis of variance on BDI scores for the four clients revealed there to be a significant downward trend at the 5% level: $\chi^2 (4) = 10.5, p < .05$.

Table 7.2. Beck Depression Inventory scores before (PRE) and after (POST) interventions, and at 1 month (1M FU), 3 month (3M FU) and 6 month (6M FU) follow-up.

Subject	PRE	POST	1M FU	3M FU	6M FU
HJ	23	12	10	10	8
LJ	28	24	18	16	10
CE	9	9	10	12	8
EE	25	22	20	20	9

Symptom Checklist. Results on the Symptom Checklist revealed that no client reported a new symptom during the study. The Symptom Checklist proved sensitive to the changes in the belief conviction of HJ, LJ and EE.

(c) Measures of Susceptibility to Change

Accommodation. Over a total of 26 baseline interviews no client reported having modified or abandoned his or her belief in response to a disconfirming experience. There was evidence to suggest that for at least two clients (HJ and EE) disconfirming experiences had occurred, but were simply not recognized as such. For example, part of HJ's 'persecution' involved being told repeatedly by the voice of her persecutor that her boyfriend was being unfaithful. On one instance during the baseline phase the boyfriend hotly denied the charge. In spite of the fact that all the boyfriend's behaviour befitted that of a doting and faithful partner and even though the only evidence HJ had for his infidelities was the auditory hallucinations, she reported 'knowing' that he was lying and was seeing other women. Following the introduction of the verbal challenge phase one client, LJ, reported two separate instances of disconfirmation. For instance, on one occasion she was out shopping with her young son when her ex-husband saw them and yet walked straight past without acknowledging either one of them. LJ believed that this had been an attempt to upset her son deliberately, and felt that it had been an 'evil' thing to do and unlike any of her actions.

Reaction to Hypothetical Contradiction. The instances of hypothetical contradiction put forward to each client were as follows. HJ was asked whether her belief would be altered in any way if the voices turned out to be coming from part of her own mind and not from other people. JL was asked whether her belief would be altered in any way if those people whom she respected most (including her father whom she respected greatly) had stated that they felt that she was not an evil person and had not contaminated them in any way. CE was asked whether her belief would be altered in any way if she were allowed in her neighbour's house at a time when the gas was coming through and discovered

nothing - no Mr F and no machine. EE was asked whether his belief would be altered in any way if it could be proven beyond doubt that the staff from his University had nothing to do with his being asked to leave the teacher training course.

As is shown in Table 7.3, when faced with these instances of hypothetical contradiction three of the four clients (HJ, LJ & EE) responded on at least one occasion that if such an occurrence took place it would lead them to lower their belief conviction. No client reported that the instance of hypothetical contradiction would lead him or her to reject totally his or her belief. One client, CE, flatly refused to acknowledge even the possibility of a disconfirming experience: CE was the only client whose conviction scores were unaffected by the interventions (see Figure 7.1).

Table 7.3. Measures of reaction to hypothetical contradiction at week 2 and week 4 of baseline for each subject.

	Subject			
	HJ	LJ	CE	EE
WEEK 2	2	0	0	2
WEEK 4	2	2	0	2

Key.

0 - denotes no change.

1 - denotes change in belief content but not conviction.

2 - denotes change in belief conviction.

3 - denotes rejection of the belief.

(d) Validation of the Effect

External validation of the effect was obtained for each client. In the case of HJ, external validation was provided by the client's community psychiatric nurse. Interviews were conducted during the baseline phase, soon after the final session of the intervention, and after the six month follow-up. Assessment taken prior to the introduction of the interventions revealed: (i) that HJ was absolutely certain that she was in danger of being murdered (ii) that she had held the belief for over 2 years, and (iii) that she had never doubted her belief. However, at the close of the verbal challenge phase HJ reported to her community psychiatric nurse that although she still heard voices telling her that she was going to be killed, most of the time she now discredited what they said. When asked to quantify this she stated being only 25% certain that she was in danger, and felt it far more likely that the belief was false. Only on rare occasions did HJ actually believe she was going to be harmed. The independent assessment also revealed that HJ was gaining insight into the true nature of her belief by beginning to attribute her belief to voices which were inside her head and as such were not based on reality.

During the follow-up period validation of change was also provided independently by two members of staff from the day hospital HJ attended. Each stated that following the intervention phase HJ was much improved and was coping better with her problems; also whereas before she had been absolutely certain of her beliefs, now she was expressing a doubt in her belief. One of these members of staff made the interesting observation that on those occasions when HJ heard a voice say she was going to be killed, whereas in the past she could not be re-assured verbally, this was now the case. That is, to re-assure her in the past staff had to escort her outside to see for herself that there was no one there; now they need only tell her that there was no one trying to harm her. HJ's CPN conducted a final assessment shortly after the six month follow-up. At this meeting HJ stated that when hearing the voices say she was going to be killed she was absolutely certain that this was true. However, when not hearing them she did not

believe that the voices were real and felt certain that no one was going to harm her.

In the case of LJ, the external validation was provided by a clinical psychologist who had been working with LJ for about one year. Three assessments were conducted, one during baseline and two during the intervention phase. Prior to the introduction of the intervention LJ told the clinician that she had held her belief that she was evil, and would be punished because of this, for the past eight years. LJ reported having slight doubts about her belief, and when asked to quantify this reported that she was 80-90% certain of her belief. At an assessment conducted following the first session of reality testing LJ reported to the clinician feeling the benefit of the intervention. She reported coping well and changing her ideas about herself, and stated that she currently did not feel that she was evil. At week 12 of the study LJ reported being 50% certain that part of her was evil: she stated that her degree of belief conviction had increased somewhat since the last assessment, because she had seen her ex-husband who looked ill and gaunt. (Maternity leave prevented the clinician from conducting further assessments).

In the case of CE, the external validation confirmed that her degree of belief conviction had remained at 100% for the duration of the study. In the case of EE, who was particularly guarded about his beliefs, external validation was supplied by his mother. EE discussed his beliefs with his mother frequently; she was both the person most familiar with the nature of the belief and the one best situated to observe change. Before the introduction of the intervention EE's mother confirmed that he was totally certain of his belief - despite her constantly telling him it was 'all rubbish' - and had held the belief for close to ten years. She reported how EE shouted and swore at people in the shop whom he suspected of spying on him. By the close of the verbal challenge intervention, EE's mother reported observing a change in her son, who now accepted (i) that his belief might be false, and (ii) that his belief might have been formed in reaction to his unsatisfactory life situation. However, she did point out that his new-found open

mindedness diminished considerably when he was highly stressed or agitated, at which times he was sure of his belief.

Largely as a result of the intervention, it was felt that EE would be more willing to discuss his belief openly. Therefore, following the final follow-up meeting an independent assessment was conducted by a trained nurse and psychology graduate. The assessment revealed that EE had held his belief for nine years, during which time he had never doubted his belief. EE reported being far less certain of his belief as a consequence of participation in the present study, although he stated that at present he was not able to 'completely cast the belief aside'. Although EE stated that at times his thinking still could be 'a bit wild', he felt that as a result of the intervention he was better able to control his thinking and felt that he was 'making more sense'. In support of this claim he was able to recall counter arguments put forward by the experimenter to counter his belief: he added that he believed the alternative explanation put forward by the experimenter made more sense than his own belief. Finally, EE said that he felt calmer as a result of the intervention, although he was still a bit anxious.

Discussion.

As in Experiment 3, major reductions in delusional belief conviction were achieved in a small number of weekly sessions. In the present study beliefs of between two and nine years standing were challenged over six to 13 weeks. Although baseline conviction scores were consistently high, by the end of the intervention phases three of the four clients (HJ, LJ and EE) showed substantial reductions in conviction. In two cases (HJ and LJ) the beliefs were rejected totally at the two concluding sessions of the intervention phase. Maintenance was good, with the benefits of the interventions still in evidence at the six month follow-up sessions. The study also offers support for the view of delusions as multidimensional: as in Experiment 3 no consistent relationship emerged between the three delusional dimensions of conviction, preoccupation and anxiety.

The first stage of the intervention, reality testing, produced no change in belief conviction with two clients (HJ and CE). However, in the case of one of these clients (CE) reality testing did produce a change in the belief content. In the case of EE reality testing produced a slight, fleeting reduction in belief conviction. Although in the case of LJ reality testing initially had a powerful effect on belief conviction, as was the case with EE the effect was not maintained. The introduction of the verbal challenge condition produced major reductions in belief conviction in two of the three clients with whom reality testing alone had produced little or no effect (HJ and EE). In the case of LJ, low conviction scores were observed during both the reality testing and verbal challenge phases.

On the basis of the present study, reality testing on its own would seem to be a weak intervention, perhaps because of people's ability to 'rationalize away' instances of direct disconfirmation (this point will be discussed more fully in Chapter VIII). Reality testing might be better suited as a second intervention, following the verbal challenge, where in the study reported in Experiment 3 it improved upon the effectiveness of the verbal challenge intervention alone in two out of three cases. It might be argued that the effectiveness of the reality testing intervention was dependent entirely on the adequacy and nature of the test itself, rather than on the individual client's ability to accommodate disconfirmation. Clearly this remains a possibility. In the case of EE, for instance, the chosen reality test might seem to be weaker than an actual meeting between EE and one of the lecturers: it might be argued that the latter would have produced a more dramatic and stable drop in belief conviction. And yet EE's attribution that his persecutors were lying applies just as easily to words spoken face to face as those conveyed through a go-between. Equally, when LJ's friends stated that they felt that she was neither evil nor a contaminating influence on those around her, LF might have decided that her friends were lying - but she did not. Clearly, it is difficult to say what constitutes a 'good' test of a belief. For this reason the choice of the tests involved negotiation with the clients. In this way, however diverse the reality tests may be they shared at least one common feature; each client agreed in advance that the task chosen was a good test of his or her belief. In this respect the different responses to reality testing observed in this study, and in Experiment 3, represent different responses to direct disconfirmation. On the basis of his or her belief each client made a specific prediction which was not born out. Reality testing might also be thought of as assessing the degree of correspondance (cf. Risley & Hart, 1968) between what the clients say they will do in such-and-such an eventuality (i.e. if the experimenter's prediction is born out), and what they actually do when faced by it.

In response to the accommodation test, during baseline interviews no client reported having altered his or her belief in response to an instance of disconfirmation. An identical finding was reported in Experiment 3. Also, as in Experiment 3, each client reported instances of confirmation. However, a poor response on the accommodation test might reflect not simply a confirmation bias; clients may also be disregarding quite blatant instances of disconfirmation. In the present study, two clients (HJ and EE) reported events which appeared to be disconfirming and yet were not seen to be so by the client. Yet even a failure to accept disconfirmation when confronted with it might be a further example of continuity in functioning between deluded and non-deluded people. There is now a body of evidence to suggest that the beliefs held by the 'normal' population can be very resistant to quite direct forms of disconfirmation (e.g. Lord et al., 1979; Jennings, Lepper & Ross, 1980, discussed in Chapter II).

Following the introduction of the interventions LJ reported two examples of disconfirmation. Similarly, in Experiments 2(a), 2(b) and 3, clients who had begun to doubt their beliefs subsequently started to report disconfirming experiences. Also as in these studies, in the present study clients began to 'not observe confirmation'. Thus, during the intervention phase, two clients (HJ and EE) were able to interpret events in a non-delusional manner which they had seen in delusional terms prior to the intervention phases. For instance, although prior to the intervention HJ's frequent auditory hallucinations stating that she was going to be killed were interpreted as strong evidence that her belief was true, during the verbal challenge phase only rarely were her hallucinations interpreted delusionally. Although by the six month follow-up HJ reported that when the voices threatened her she once again believed them totally, she subsequently was able to re-evaluate the experience in a non-delusional way. Clearly this is another way in which maintenance might be promoted. EE reported a similar experience. At the 6 month follow-up meeting EE reported having been certain that a particular person had come into the shop in order to spy on him, but later on rejecting this interpretation as implausible. Thus the present study offers

further support for the contention that such clients can come to regulate effectively their own behaviour: a finding of obvious clinical benefit, and one which represents further evidence of the continuum in behaviour with the non-clinical population, as well as with other clinical groups (cf. Lowe, 1983; Vygotsky, 1962; Woods & Lowe, 1986).

Although results on the accommodation measure demonstrated that the four clients were not seeking to disconfirm their beliefs, the reaction to hypothetical contradiction (RTHC) measure indicated that three of the four clients (HJ, LJ and EE) possessed at least the potential for accommodation of evidence at odds with their beliefs. Results from Experiment 3 suggest that response to hypothetical contradiction might be a useful predictor of sensitivity to a modification treatment. In the present study the three clients who were most responsive to RTHC (HJ, LJ and EE) were also those most sensitive to the interventions: conversely, the client whose conviction scores were unaffected by the interventions (CE) also recorded the lowest score on the RTHC measure.

The two clinical measures, the BDI and Symptom Checklist, were included to assess for possible side effects of the loss or partial loss of a delusional belief. In the cases of the three clients whose belief conviction was lessened by the interventions, there was a significant downward trend in BDI scores over the course of the study supporting the view that there are wider clinical benefits associated with the weakening or loss of delusions (cf. Milton et al., 1978, and Experiment 3). The BDI scores for CE did not change noticeably over the course of the study. Results on the final measure of change, the Symptom Checklist, offered no suggestion that the weakening or loss of one delusion would lead to the formation of a new belief.

In short, the present experiment reinforced the view of delusions as complex phenomena on a continuum with normal functioning, and developed further the component analysis of the verbal challenge and reality testing interventions begun in Experiment 3. On the basis of these two studies it can be concluded tentatively that the reality testing intervention might be more

effective following the verbal challenge. The verbal challenge appears to be very effective either as a first or second intervention.

CHAPTER VIII. CONCLUSION

The present research had two broad aims. The first of these was to achieve a better understanding of the characteristic behaviour of people with delusional beliefs. This goal was pursued jointly through description and intervention. The second goal was to assess the degree to which the behaviour of people with delusions was like the behaviour of other groups, particularly the normal population.

The first aspect of delusional functioning which might be described is the process of belief formation. The present research did not address the issue of the formation of delusions directly. Indeed, it is difficult to conceive of how such a study would be undertaken. However, the topic was addressed indirectly in two ways. First, Experiment 1 was devised to look at how people with delusions formed rules in a general problem-solving situation. Second, the nature of the modification studies was such that a great deal of information about the formation of delusions was collected post hoc.

The ability of people with delusions to form rules in an abstract problem-solving situation was assessed in Experiment 1. Clients were given the Wisconsin Card Sorting Test, which required them to form and subsequently abandon a number of problem-solving rules. The study demonstrated that in at least some situations people with delusions are able to both form appropriate rules with which to organize their behaviour, and subsequently to abandon these rules in the light of changing experimental conditions. Moreover, these abilities were present to a level which was comparable with normal control subjects and better than that of a group of non-deluded 'schizophrenics'. Thus, Experiment 1 suggested that at least some aspects of the belief formation processes in people with delusions were on a continuum with normal functioning. The study also suggested that in at least

some contexts, albeit 'experimental', the behaviour of people with delusions was sensitive to environmental control.

Description was also an integral part of the four modification studies. In the case of each client a baseline phase of at least five weeks was conducted. In the modification studies each of the 12 clients put forward a plausible account for the formation of his or her delusions. All 12 clients were able to indicate specific events which had led them to form their beliefs - that is, each client gave evidence, albeit constructed on a post hoc basis, of an ability to base a core belief on a number of inter-related interpretations of reality. From the evidence provided delusions could be viewed as understandable attempts at making sense of particular experiences: indeed, the verbal challenge intervention was dependent on this being the case. No client in the present research presented with what has been called a primary delusion (Jaspers, 1915, discussed in Chapter III) - that is, a delusion which could not be understood in terms of the client's life experiences. In this sense, the present research supports the view put forward by Maher (1974: see Chapter III) that deluded individuals are 'good scientists'. However, bearing in mind the discussion in the opening chapter of the bias and error inherent in the normal belief formation processes (cf. Tversky & Kahneman, 1973; Bruner, 1957), the use of the word scientist might be misleading. Maher's point is that there are common processes responsible for the formation of delusional and non-delusional beliefs.

It might be argued that because in many cases the experiences the delusion was invoked to explain were abnormal, then it would be wrong to view the behaviour of people with delusions as being on a continuum with normal functioning. Certainly, in the present research seven clients appeared to form their beliefs, at least in part, to account for experiences which might be called abnormal (BP, BG, DR, HM, CE and HJ). In response to this argument two points can be made which preserve the notion of a continuum. First, it is by no means clear that experiences such as auditory hallucinations are abnormal (Strauss, 1969). Research on the existence of so-called schizotypal traits in the normal population has suggested that auditory hallucinations,

for example, might be on a continuum of their own (Slade & Bentall, 1988). Second, the relative normality of these experiences says nothing about the normality of the belief formation processes underpinning delusions. As Maher (1974) highlighted, it is possible to form normal explanations for abnormal experiences. Thus, drawing attention to other behaviours which one may believe to be abnormal in no way constitutes a demonstration that the belief formation processes underpinning delusions are abnormal.

In keeping with an emphasis on description, a number of aspects of delusional behaviour were measured during extensive baseline phases in each of the modification studies. These baseline sessions thus provided a detailed picture of the nature of a number of dimensions of delusional experience over time. The first of these measures, accommodation, assessed the extent to which clients both recognized instances of disconfirmation and altered their beliefs accordingly.

Clients in all four experiments responded in a similar fashion on the accommodation measure. Prior to the intervention phases clients typically did not report instances of disconfirmation. There was only one exception to this rule: BG reported two instances of disconfirmation during the baseline phase, one in the case of Belief 1 (that she was only in her teens) and one in the case of Belief 2 (that she was daughter of Princess Anne). However, in the case of BG's first belief, conviction was not absolute during the baseline phase: during a far longer baseline phase BG did not report an instance of disconfirmation in the case of her third belief, which she held with absolute conviction. Also, in the case of BG's second belief, the instance of disconfirmation was reported at the start of the seventh session of the baseline, when belief conviction fell to only 80% due to an apparent generalisation effect. It is thus possible that BG observed these instances of disconfirmation because she was not certain of the two beliefs in question. Other than BG no client reported an instance of disconfirmation prior to the introduction of the interventions during a total of 85 baseline sessions.

Following the introduction of the interventions many clients did report instances of disconfirmation. During the verbal challenge phase four clients (BP, TD, HM and LJ) who had begun to doubt their beliefs reported instances of disconfirmation. Two clients (MM and LJ) reported instances of disconfirmation during the reality testing phase. In addition to observing disconfirmation, clients also began to 'reality test' their beliefs. During the verbal challenge phase BP tested his interpretation of a comment made by one of his friends, which at the time he had taken to be evidence that his belief about Amanda was true. Having come to doubt his belief HM tested his notion that women in cafeterias showed a particular interest in him.

It might be argued that these clients began to doubt their beliefs because of their observations of events at odds with their beliefs. However, on the basis of the present research this seems unlikely. The only client to report an instance of disconfirmation during the baseline phase did so in the case of beliefs about which she was not totally certain. In fact not one client reported a contradictory occurrence in the case of a belief of which he or she was absolutely certain at that point in time. Thus on the basis of these findings it would appear that clients observe disconfirmation spontaneously only in the case of beliefs about which they are not absolutely certain. There was no evidence to suggest that it was disconfirmation other than that provided through the interventions which was responsible for the reductions in belief conviction observed at the start of the intervention phases. Thereafter results on the accommodation measure throughout the intervention phases suggested that the relationship between degree of belief conviction and observing disconfirmation was dialectical.

These results on the accommodation measure are open to at least two different interpretations. Either disconfirmation is, for whatever reason, being missed, or disconfirming experiences are not occurring. No doubt particular beliefs will be far less open to disconfirming experiences. For example, BP's belief that he was Leonardo de Vinci impinged very little upon his everyday life and it is difficult to think of ways in which it might have been

disconfirmed through everyday experience. So too with BP's belief that he had been Jesus Christ in a prior life, and JE's belief that he was Elvis Presley. However, intuitively it seems unlikely that instances of disconfirmation do not occur in the case of all delusions. Indeed, the present research suggested that this is not the case. First, in the case of DR, for example, his consistent failure to change the course of history required considerable efforts of 'accommodation' on his part in order to retain his belief intact. Other clients were forced into similar efforts of accommodation in order to retain their beliefs. In the case of BP, although his belief led him to predict that the famous sportswoman would be coming for him very soon, he was still able to interpret her non-appearance in such a way as to be consistent with his belief. Second, in the case of two clients in Experiment 4, instances were reported during the baseline phase which although not interpreted by these clients as disconfirmatory certainly appeared to be so. Third, the finding that having come to doubt their beliefs many clients subsequently did report instances of disconfirmation suggests that such occurrences are not uncommon. Thus, whilst it remains a possibility that the failure of some clients to report instances of disconfirmation may have been an accurate appraisal of their experience, in other cases instances of disconfirmation occurred but were interpreted in some other way.

A similar argument applies when discussing why clients in the present research did not seek to reality test beliefs until during the intervention phases. The very fact that some clients did engage in reality testing during the intervention phases suggests that at least in some cases the beliefs were open to testing. Moreover the reality testing intervention was based on the premiss that beliefs can be tested, and in the cases of seven clients a test was conducted. Thus, it would seem that at least some clients were not testing beliefs which could have been tested.

On one level these findings are unsurprising. Each of the clients involved in the four modification studies had held his or her belief for a minimum of two years and, typically, for far longer. It seems plausible that the long-term maintenance of a delusion relies at least in part on the client's ability to ignore or

'accommodate' disconfirming experiences. Equally, one might expect that a client who sought to test his or her belief would be less likely to hold the belief for a number of years. However, far from being an example of discontinuity from normal functioning, the failure to observe disconfirmation and to reality test a strongly-held belief appears to be a further point of continuity. As was discussed in Chapter I, there are very few practising Popperians. People who hold delusions, like people who hold other strongly held beliefs, are not normally in the business of seeking to disconfirm their beliefs - indeed, to the contrary, they appear to go to great lengths in order to retain them.

What is perhaps equally noteworthy is that each client reported instances of confirmation during baseline interviews. Many of these instances were not of an obviously confirmatory nature. Often ambiguous information was interpreted as confirmatory. In the case of his Amanda belief, BP's quest for confirmation even extended to interpreting a meeting with a girl he did not recognize as being a meeting with Amanda in disguise. In the case of DR, his failure to change history was interpreted as evidence that his belief was true by virtue of the fact that people were choosing to ignore his messages. In the case of EE, a customer entering the family shop need only be 'articulate' for EE's belief to be reinforced. In the case of LJ any bad occurrence was interpreted as punishment and therefore taken as proof that she was an evil person. Similar examples occurred in the cases of all 12 clients. Thus, although the 12 clients in the present research appeared to experience difficulty in recognizing disconfirmation, they revealed no such difficulty in observing confirmation. That is, they displayed a 'confirmation bias' (cf. Wason, 1960; 1976 and Popper, 1976, discussed in Chapter I) - a familiar feature of normal belief maintenance and yet another instance of continuity with normal functioning.

On the basis of the accommodation measure as employed in the present research three important conclusions can be reached. First, clients with long-standing delusions neither typically observe instances of disconfirmation nor engage in reality testing until after they have begun to doubt their beliefs. Second, and of

equal importance, the behaviour of people with delusions is sensitive to the influence of an intervention. Following the introduction of the verbal challenge and reality testing clients did begin to observe disconfirmation and even to seek actively to test their beliefs. Third, the processes underpinning the maintenance of delusions appear to be the same as those underpinning the maintenance of normal strongly held beliefs. Delusions, it would appear, can neither be distinguished from normal beliefs in terms of the processes underpinning their formation nor their maintenance.

In addition to the accommodation measure, three dimensions of delusional experience were also measured at each baseline session. These were the degree of belief conviction, the extent of preoccupation with the belief and the amount of anxiety experienced at such times. In the case of each experiment an analysis of covariation was conducted between conviction, preoccupation and anxiety scores over the baseline period. There was no consistent correlation between these three dimensions across the baseline stages in the four experiments. In Experiment 3 the only significant correlation between baseline scores was for conviction and anxiety. In Experiment 4 the only significant correlation on baseline scores was for conviction and preoccupation. In Experiments 2(a) and 2(b) none of the three measures was correlated significantly during the baseline phases. These findings are consistent with the view of delusions as multidimensional phenomena.

For each experiment an analysis of the degree of covariance was also calculated between the conviction, preoccupation and anxiety scores for all sessions. In Experiments 2(a), 2(b) and 3 an overall significant correlation did emerge between conviction and preoccupation: no other correlation was significant in more than one of the four experiments. This might be interpreted as evidence that as people reject or come to doubt their beliefs, so they spend far less time thinking about them. However, while this may be true in some cases, this finding is not true universally. In Experiment 4 a significant correlation did not emerge between conviction and preoccupation scores from all sessions. Moreover,

even within those studies where the correlation between conviction and preoccupation was significant, inspection of these graphical data revealed exceptions to this rule. In Experiment 3, for instance, in the cases of two of the six clients (TD and MM) belief conviction fell dramatically following the introduction of the interventions even though preoccupation scores remained high. Thus, whether the three measures of conviction, preoccupation and anxiety were related was highly dependent on the individuals concerned - a finding which is consistent with the multidimensional view of delusions.

In each of the four studies the PQ measure of conviction and the percentage conviction rating were correlated very closely. This suggests that the two measures are reliable. The reliability of the remaining two PQ measures, preoccupation and anxiety, was not assessed in the present research. This omission needs to be rectified in future research. However, an attempt was made to improve the reliability of the preoccupation measure by quantifying the different statements of intensity. Thus, where Brett-Jones et al. employed statements such as 'I think about my belief absolutely all the time', in the present research 'At least once an hour' was preferred. It might be argued that this created a ceiling effect and that in the cases of TD and MM in Experiment 3 (where preoccupation scores were constant) preoccupation was falling but the measure was not sufficiently sensitive to detect the reduction. That is, it is possible that these two clients were thinking about their beliefs ten times an hour at the onset of the baseline phase and only twice an hour by the close of the intervention phase. However there was evidence to suggest that this was not the case. During the intervention phase each client stated that he still thought about his belief just as often as before but was no longer as certain. In future research as well as incorporating a test-retest reliability check for preoccupation and anxiety scores, a wider spectrum for responses might also be included, possibly involving more than five statement cards.

Changing Delusional Behaviour

The two interventions employed in the present research were designed primarily to reduce the clients' degree of belief conviction. Each of the four experiments suggested conclusively that major reductions in the degree of belief conviction with which delusions are held can be achieved using a belief modification treatment. Moreover, these effects can be achieved in a small number of weekly sessions. Of the 12 clients who participated in the modification experiments, seven rejected their beliefs entirely at some point during the verbal challenge or reality testing phase. Of the remaining five, three experienced substantial reductions in their degree of belief conviction. Only two of the 12 clients maintained their baseline levels of belief conviction throughout the intervention phases.

The verbal challenge intervention was designed to challenge the client's core delusion through structured non-confrontational discussion. The intention was (i) to make the client aware of the way in which beliefs guide behaviour, (ii) to deautomise the regulatory power of the delusion, and (iii) to supply the client with an alternative rule with which to interpret his or her past and future experiences. The verbal challenge was the only intervention employed in the first two modification experiments (2a and 2b) reported. In each case the client rejected entirely his or her delusions. In Experiment 3 the verbal challenge preceded reality testing, where it led to a reduction in belief conviction in the cases of four out of the six clients (TD, EJ, DR and HM). One client (HM) rejected his belief completely during the verbal challenge. In Experiment 4 the verbal challenge followed reality testing. In the case of two (HJ and EE) of the three clients whose belief conviction was affected least by reality testing, major reductions in belief conviction were observed in the verbal challenge phase: indeed, in both cases the delusions were rejected totally at some point during the verbal challenge. In the case of one further client (LJ) the verbal challenge proved as effective as reality testing. Thus, the verbal challenge intervention was seen to

be very effective coming either as a first intervention or following reality testing.

The effectiveness of the reality testing intervention was far less consistent. Reality testing was conceived as a means of demonstrating to the client that his or her belief was false. In each case the client and experimenter agreed upon and conducted a test of the delusion. In Experiment 3 the reality testing intervention followed the verbal challenge in the case of three clients, and in Experiment 4 preceded the verbal challenge in the case of a further four clients. In Experiment 3, reality testing had a major effect on the degree of belief conviction in the case of two of the three clients whose conviction was affected least by the verbal challenge. This finding was encouraging in that it suggested that clients who were not sensitive to the verbal challenge alone might be receptive to reality testing. In Experiment 4 when reality testing was the first intervention employed, it did not produce a stable reduction in belief conviction in the case of any of the four clients. In two cases (HJ and CE) reality testing had no effect on belief conviction, whilst in the remaining two cases (LJ and EE) it produced effects which were not maintained. (It should be noted that in the case of LJ there was also a return to the baseline conviction rate during the verbal challenge.) Thus, on the basis of these seven clients who received the reality testing intervention, it can be concluded tentatively that reality testing is more effective when it follows the verbal challenge.

It is possible to interpret the observed discrepancy between the effectiveness of reality testing as an initial or secondary intervention in a number of ways. First, it might be pointed out that the finding would need to be replicated in order to draw any firm conclusion. Second, it might be argued that the discrepancy is a function of the adequacy of the reality test - this point was discussed in Chapter VII. Clearly, some reality tests will be more powerful than others - although it might equally well be argued that the same objection holds good in the case of the verbal challenge. Just as some beliefs might be more suited to the verbal challenge, others might be more suited to direct testing: with respect to the latter, the belief of MM, discussed in Chapter VI,

might be a case in point. If this second interpretation is to carry full force, what constitutes a good reality test needs to be established other than by its effect on belief conviction. Otherwise, a good reality test becomes by definition one which produces a reduction in belief conviction: such a state of affairs runs the risk of obscuring the potential benefits inherent in determining the optimum manner in which to employ belief modification interventions. One distinction which might be drawn between the different reality tests would be that some involved actually doing something, whereas others involved being done unto in the form of a verbal disconfirmation. In other words where one client was asked to predict specific words on television and another to attempt to win the football pools, others were told that they were not being persecuted. It might be felt that a verbal re-assurance was the weaker of these two types of test. And yet in the case of LJ a verbal re-assurance was sufficient to produce a dramatic drop in belief conviction. Moreover, although MM did reduce his belief conviction when faced by his inability to demonstrate his powers, DR did not. Finally, it is important to remember that the reality tests were not the product of just one person. In each case the test was selected after a process of collaboration between the client and the experimenter; this adds weight to the argument that the reality tests were valid.

Alternatively the discrepancy between the effectiveness of reality testing as a first intervention and following the verbal challenge might be interpreted in terms of the clients' behaviour. On one level reality testing involves simply providing an instance of disconfirmation. However, this is something of an oversimplification. Reality testing also involves the client and experimenter making explicit and contradictory predictions with both parties accepting that one of the two outcomes contradicts their respective position. The force of the intervention hangs jointly on the extent to which the client both accepts the outcome as an instance of disconfirmation and modifies his or her belief accordingly. Thus there are at least two ways in which the client can retain his or her belief in the face of an unsuccessful reality test. First, the client can simply not accept that disconfirmation has occurred. Thus, in order to maintain their beliefs, both CE and

EE chose ultimately to believe that people were lying. Second, the client can accept the outcome of the test at face value, but not revise his or her belief in any way - that is, he or she can 'acommodate' the eventuality. Although DR recognized that he had not won the football pools, and in this sense had failed, this did not lead to any revision of his belief. Rather than questioning his ability to communicate with people in the past DR was able to attribute the outcome to contextual variables such as his mind not being 'active' on the two occasions when the test was conducted. People with delusions, like people with other strongly held beliefs, are very capable of adhering to beliefs in the face of quite direct forms of disconfirmation (cf. Lord et al., 1979; Jennings et al., 1980, discussed in Chapter I).

The example of DR's response to reality testing highlights a critical difference between the verbal challenge and reality testing interventions, and one which might account for why reality testing is not a strong first intervention. In Popperian terms particular beliefs are well 'immunised' (cf. Popper, 1977) - that is, they are able to incorporate most occurrences, however contradictory. Thus, clients might well be able to accommodate disconfirmation by falling back on the explanatory or regulatory power of their core delusions - that is, the delusion directs the way in which the outcome of the reality test is interpreted. Reality testing does not challenge the client's core delusion or rule directly: rather it challenges the predictive power of the rule. In Experiment 3 each of the clients who was subjected to reality testing already had been exposed to a plausible alternative explanatory system. This meant not only that the regulatory power of the delusion had been challenged, but also that the clients had at least the option of replacing the delusion with another rule with which to understand their experiences. In Experiment 4, where reality testing followed the verbal challenge, the clients were not provided with an alternative rule or interpretive framework within which to interpret the outcome of the test.

Thus, it might be the case that the differences between the two interventions can be understood in terms of their effect on the regulatory power of the delusion. When reality testing

appeared first clients were asked to abandon their delusions without being offered an alternative: this might explain why the reductions in belief conviction in the cases of LJ and EE were short-lived. When the reality testing followed the verbal challenge clients had a ready alternative explanation to the delusion. Thus, they were still able to construct a meaningful account for their past and present experiences in the absence of their delusion. The alternative account also offered the client a way of interpreting ongoing events. This would explain why many clients began to observe disconfirmation - that is, the alternative explanation put forward by the experimenter was internalised (Vygotsky, 1962) and was gaining a regulatory property of its own.

The behaviour of many of the clients during the follow-up period offers support for the idea that the clients were using the alternative rule put forward by the experimenter to guide their behaviour. First, events which prior to the intervention phase were viewed as confirmatory were no longer seen to be so. For example, both BG and HM ceased to view auditory hallucinations as confirmatory. This would appear to be clear evidence that the regulatory power of the delusion had been deautomised. Second, clients were able to reinterpret events non-delusionally which they interpreted initially in delusional terms. For instance, EE was able to reject his initial attribution that a particular customer was spying on him. In the case of BP, although mind reading was the first thing that came to his mind when he experienced the pulsating sensation in his temple, he was able to reinterpret the experience subsequently. This is in marked contrast to his behaviour prior to the intervention, when he was doing precisely the reverse - that is, reinterpreting events in a delusional way. For instance, although he did not recognize the girl at the bus stop, he later 'realized' that she had been Amanda. Both instances are extremely similar to the notion of rule governed behaviour (cf. Skinner, 1969), a familiar feature of human operant research, where a particular rule or hypothesis leads an individual to interpret events in a prescribed fashion (Lowe, 1979, discussed in Chapter I). Clearly rules can affect all kinds of behaviour, including other verbal behaviour.

Thus, in many cases, the maintenance of the effects of the intervention appeared to be due both to the deautomization of the regulatory power of the delusion and to non-delusional self-regulation. The notion of deautomising the verbal control of particular beliefs or rules is a familiar one within cognitive behaviour therapy (e.g. Kelly, 1955; Hayes, 1987). In the case of treatments for depression, in particular, attempts have been made to deautomize the regulatory control of particular types of negative self-statement (e.g. Abramson et al., 1983; Beck, 1976). The present research suggests that such an approach can usefully be extended to include the treatment of delusional beliefs in those people diagnosed as schizophrenic.

One obvious question to be asked is why the interventions were so effective: equally, why did the beliefs of two of the clients prove to be resistant to the interventions. The independent assessments revealed that the clients found it useful to be able to view their beliefs as having developed in response to their life situations, and in this sense being understandable reactions. It is interesting to speculate whether emphasising the extent to which the clients are like other people, and playing down the extent to which they might be set apart from others, limits the amount of 'psychological reactance' (Brehm, 1966: Chapter III). That is, whether it is the case that offering the client a way of interpreting his or her experience in terms other than those of 'mental illness' actually makes the client more susceptible to an alternative viewpoint. Certainly this possibility merits further investigation.

In Chapter I it was suggested that the therapeutic setting might be thought of as exploring the client's zone of proximal development (Vygotsky, 1962). Within the present research the experimenter attempted to assist the clients to adopt an alternative framework within which to interpret their experience and direct their behaviour. Adopting the Vygotskyian framework a successful intervention becomes one where the client not only rejects his or her delusion, but subsequently is able to regulate his or her thinking during the follow-up period. That is, in order to reap the full long-term benefit the ability acquired during the

intervention must become internalised. Within the present research the reductions in belief conviction observed during the intervention phases and the subsequent maintenance of these changes appeared to owe a great deal to the clients ability to exercise mature self-regulation of their behaviour.

Promoting self-regulation might therefore be thought of as one of the major benefits of the present research, and may explain why the interventions were effective. Equally, the Vygotskyian analysis offers a way of understanding why in two cases the interventions were not effective. Clearly on the basis of only two clients it is difficult to begin to state why a technique does not have an effect: this problem is particularly acute given that one of these clients (WH) received only the verbal challenge and one (CE) received both the verbal challenge and reality testing. However, in general terms the successful exploration of a client's zone of proximal development is dependent on the ability of the clinician to establish a starting point from which to assist the client to progress (cf. Wertsch, 1984, discussed in Chapter I). In this way the failure of the interventions to reduce the degree of belief conviction with which WH and CE held their delusional beliefs might reflect a failure on the part of the experimenter to negotiate a starting point from which to begin the discussion of the beliefs. In the absence of such a base it might well be that the client would perceive the interventions as confrontational and hostile. This would be consistent both with the finding that at no point did either WH or CE give any indication that they viewed their beliefs as other than definitely true, and the occasional hostility shown by WH during the verbal challenge. Although this analysis of why the intervention phase was ineffective in two out of the twelve cases remains purely speculative at this stage, it has the advantage of highlighting the possibility that failure need not reflect a shortcoming on the part of the client.

Another way of approaching the task of determining why an intervention is effective in some cases and not in others is to isolate measures which predict the outcome. Within the present research two measures were employed for this purpose: the Symptom Checklist and reaction to hypothetical contradiction

(RTHC). The Symptom Checklist was included to determine whether the success of the belief modification was related to the presence of symptoms other than the delusion. It might be thought that a delusion which was reinforced by 'primary' experiences such as auditory hallucinations or experiences of reference would be more resistant to change. The present research suggested that this is not the case. First, major reductions in belief conviction were achieved in the case of all clients who reported experiences of reference or auditory hallucination. Second, WH reported no symptoms other than the delusion. Third, although CE reported olfactory hallucinations, so too did BP (often the pulsating in his temple was accompanied by the smell of a 'female scent') and yet BP rejected each of his beliefs totally during the intervention phase.

Brett-Jones et al. (1987) observed that those clients whose belief conviction fell most dramatically over the course of their study tended to be the most sensitive to reaction to hypothetical contradiction. This led them to speculate that RTHC might be used to predict the likely outcome of a belief modification intervention. This possibility was tested in the present research.

RTHC proved to be a useful guide to the clients' future responses to the interventions. Eight of the 12 clients who took part in the present research responded on at least one occasion that the proposed instance of hypothetical contradiction would lead them either to reject their delusion outright or to lower their degree of belief conviction. Each of these eight clients did lower their belief conviction in the face of the interventions. Conversely, two of four clients who stated that an instance of hypothetical contradiction would not affect their beliefs subsequently did not alter their belief conviction in the face of the interventions. However there was not a one-to-one relationship between RTHC and sensitivity to the interventions. Two clients (BG and DR) gave responses to RTHC which were at odds with their subsequent reactions to the interventions. Moreover, those clients who replied that the instance of hypothetical contradiction would lead them to reject their delusions were not always the ones who did reject their beliefs during the intervention phase: conversely.

some of those clients who stated that the hypothetical contradiction would lead them to doubt but not reject their beliefs in fact rejected their beliefs during the interventions. (This is not to suggest that one would have expected an exact match, but only to temper over-enthusiasm at the predictive power of the RTHC measure). Overall, however, RTHC would seem to be a useful guide to the success of a belief modification intervention.

It might be argued that the relationship between response to hypothetical contradiction and sensitivity to the interventions would have been closer still but for the variable nature of the instances of plausible contradiction put to the clients. This point is similar to the one made earlier in relation to reality testing. As was the case when forming reality tests, it is likely that some beliefs will be more amenable to hypothetical contradiction than others. In defence of those instances of hypothetical contradiction posed in the present research, it should be noted that very similar instances of hypothetical contradiction evoked quite different responses in different clients. For example, when asked whether her belief that she was the daughter of Princess Anne would be altered by being told by Princess Anne that the belief was false, BG replied that this occurrence would not affect her belief. However, when BP was asked whether his belief about Amanda would be altered by her saying that it was untrue, he replied that this occurrence would lead him to reject certain aspects of his beliefs and to doubt those aspects of the belief that remained.

As is the case with the reality tests, it is by no means clear what constitutes a good example of hypothetical contradiction. Part of the reason for this is that statements such as 'I am Elvis Presley' or 'I am an evil person' are part of complex belief systems to which the experimenter has limited access. The nature of this largely covert belief system determines in part what constitutes a good instance of hypothetical contradiction, reality test, and so on. For example, the effect of a particular reality test or disconfirmatory experience is dependent on the extent to which the delusional belief system is 'immunized' (Popper, 1976) against contradiction. Bearing in mind the problem of access to the belief system, the element of collaboration inherent in selecting a reality

test is critical. Hence, in the case of RTHC, one strategy which might be used in future research would be to ask clients whether they could think of an instance of hypothetical contradiction, perhaps by asking 'Is there anything which would make you doubt your belief?'. This could be done either instead of, or as well as, the experimenter posing a hypothetical contradictory occurrence.

It is noteworthy that although the majority of clients stated that an instance of hypothetical contradiction would lead them to lower their belief conviction, those instances of disconfirmation which occurred during the baseline phases did not have this effect. Rather these instances were 'accommodated' in such a way as to retain the belief intact. This indicates an important feature of RTHC, namely, that on one level it is almost an exercise in logic. Consider the case of a top politician who is asked whether if it could be shown unequivocally that his or her policy had failed he or she would abandon the policy. The answer would surely be 'Well if it could be shown unequivocally - then yes'. However, this is quite different from pointing to a particular instance which appears to be disconfirming and saying 'Look, your policy is not working - will you abandon it'. Here the politician might well dispute whether the instance demonstrated that the policy did not work. Thus it might not seem quite so unusual that although many clients were sensitive to instances of hypothetical contradiction, during a total of almost 100 baseline sessions only two instances of disconfirmation were recognized, and both by the same client (BG).

A final point about the RTHC measure concerns the apparent contradiction inherent in the behaviour of DR and CE, both of whom refused to accept the possibility of an instance of disconfirmation and yet agreed to a reality test. For example, when faced with an instance of hypothetical contradiction DR stated that failure to demonstrate his power under conditions of his choosing would not lead him to doubt his belief, and yet prior to the reality test DR stated that if it did not succeed then it would be evidence that his belief was false and he did not possess the ability to communicate with people from the past. In the case of

DR the apparent inconsistency can be explained quite easily if one assumes that the change was brought about by the verbal challenge intervention. The case of CE is more difficult to explain. It is possible that the example of hypothetical contradiction (searching her neighbour's house at a time when the gases were coming through) was inadequate; that if CE had been asked whether her belief would be altered by a meeting with Mr F at which he proved his innocence, she would have replied yes. However, on the basis of the time spent with CE this seems unlikely. Two possible explanations remain. First, CE did not consider seriously the possibility that Mr F would turn up and be able to demonstrate his innocence. Second, CE did not view the meeting as a genuine test of her belief - rather she viewed it only as a way of proving that she was right.

Although the interventions were designed primarily to reduce the degree of belief conviction, a number of different dimensions of delusional experience were also measured, so providing a fuller description of the nature of 'recovery' from delusional thinking. Thus, for example, in the case of two of the clients in Experiment 3 (TD and DR), a reduction in belief conviction during the intervention phase was accompanied by a reduction in the degree of anxiety experienced when thinking about the belief. In the case of WH both preoccupation and anxiety scores fell during the baseline and verbal challenge phases even though conviction remained unwavering. In other cases a reduction in conviction during the intervention phase was accompanied by a fall in the degree of preoccupation (BP, JE and HM). Each of these outcomes might be thought of as being beneficial clinically and as constituting one form of recovery.

In the cases of two clients a quite different change occurred which might also be seen to be beneficial. In the cases of BP and WH the delusion was 'encapsulated' - that is, it was no longer seen to apply to their current life situation (cf. Hole et al., 1978). BP stated at the three month follow-up meeting that although he was absolutely certain that in the past Amanda had been reading his mind and influencing his life, he no longer believed that she was still doing so. Similarly, at the one month follow-up WH stated that

although he had no doubt that he had been persecuted in the past, he believed it to be possible that he was no longer being persecuted. At the three and six month follow-up meetings he stated being sure of this. Hence, whilst a reduction in the degree of delusional belief conviction marks one definite form of clinical improvement, it is by no means the only possible one.

Concluding Remarks

Much research conducted on people with delusions has attempted to isolate ways in which their behaviour is different to the behaviour of the normal population, as well as other clinical populations. In accordance with the view of delusions as being on a continuum with normal functioning, a different emphasis was adopted in the current research. A constant theme running through the present thesis has been to determine the extent to which delusional behaviour is like the behaviour of non-deluded individuals. This endeavour has proved to be a worthwhile one. In so far as the research looked at the processes underpinning the formation and maintenance of delusions, those processes observed also appear to be familiar features of the belief processes common in the normal population.

A potential point of distinction between delusional and non-delusional beliefs is the belief content (cf. Mullen 1979, discussed in Chapter III). It might be felt that 'normal' people do not make claims to being able to change history or to being a member of the royal family. However, the case for this line of argument is weak. On the one hand delusions would become abnormal beliefs by definition. Typically, one of the criteria for a delusional belief is that the content is fantastic, or at the very least is not shared by the individual's peers. To distinguish delusions on the basis of content also requires that unusual content can be measured reliably. Yet the evidence does not support this assumption: in the study by Kendler et al. (1983, discussed in Chapter III) bizarreness was the only dimension which proved difficult to rate reliably. Even were bizarre or unusual content amenable to measurement, to rely upon it as the sole point of distinction between normal and abnormal beliefs would be a disturbing move

politically. This concern would be heightened by the prospect of an individual being diagnosed as suffering from a 'mental illness' such as schizophrenia, solely on the basis of a delusion. Moreover, the logical veracity of a belief cannot be asserted unequivocally on the basis of consensus, as individuals like Galileo would no doubt emphasize. If this were the case, what constituted a delusional belief would vary not only across cultures, but within a culture over time. Perhaps Jesus' own contemporaries would have diagnosed him as 'schizophrenic', as one of the clients in the present study did, had the social and political climate then been what it is now.

Another potential point of distinction between delusions and non-delusions is the function the belief might be serving. It has often been contended that delusions serve a particular function: to Freud and Cameron, for instance, it was to protect the ego from unacceptable thoughts and anxieties (see Chapter III). Certainly in the present research a number of clients held beliefs which appeared to be functional. BP's belief that he was Jesus might have been serving to account for why he was a 'schizophrenic'. His belief about Amanda might have been a way of reducing his anxiety that he was never going to be married. BG's beliefs appeared to be, initially at least, a way of helping her to live with a situation which she otherwise would have found unbearable. It is tempting to speculate whether DR's belief was related to the death of his father in a road accident. EE's belief appeared to be an example of denial and projection in order to protect him from unacceptable thoughts. It seems unlikely that these beliefs were formed in a conscious effort to achieve these ends. However, this means that if these speculations are correct then the belief formation process is influenced by pre-conscious processes. According to this account, one might predict that the loss of one delusion would lead to the formation of another belief which satisfied the same fundamental need. In the present research the Symptom Checklist was included to assess for this possibility. In the case of BP one of his three beliefs was replaced by a new belief with which it shared many properties. However, in the case of no other client was the loss or partial loss of one belief followed by the appearance of a new belief.

The possible functions delusions serve is a promising avenue for future research efforts. However, there may be difficulties in using belief function as a demarcation point between delusions and non-delusions. The first problem is to identify what function the delusion is serving. Assuming that this could be done reliably, then it would be necessary to show that non-delusional beliefs do not fulfill the same function. However, there seem to be good grounds for assuming that those functions fulfilled by delusions may also be filled by certain non-delusional beliefs. The research showing the existence of 'schizotypal' traits in the normal population (e.g. Chapman et al., 1982, discussed in Chapter II) might be seen to offer preliminary support for this possibility. For instance, it is not difficult to think of beliefs held by the non-clinical population which might be thought of as 'paranoid' or 'grandiose'. The point is that these beliefs may well be serving the same 'ego-protecting' or attributional function as delusions. Thus, the distinction would once again be one of degree rather than kind, and would be consistent with the notion of a continuum function between delusional and non-delusional behaviour.

The possibility that at least some delusions are functional raises an interesting ethical consideration. If, as Jaspers suggested, delusions are of 'vital necessity' to the individual, without which he or she would 'inwardly collapse', can attempts at modifying these beliefs be justified? It might be the case that beliefs, such as those held by BG, are helping individuals to cope with situations which otherwise would be unmanageable: certainly this is Jaspers' implication. This question is given more force by the problems besetting the diagnosis of schizophrenia (Bentall et al., 1988, discussed in Chapter II). In the absence of a clear point of demarcation between delusions and non-delusions, on what grounds can the treatment of people with delusions be justified? Questioning the assumption that people with delusions are suffering from a mental illness, or some other identifiable abnormality, demands that the traditional justifications for 'treating them as though such an abnormality did exist' be re-considered. Such arguments have been voiced in relation to a number of clinical disorders (cf. Szasz, 1969). This is not to suggest that people with delusions should not be treated, but

rather than the premisses upon which they are being treated at least be made explicit.

This ethical consideration applies to the present research. The first point to be made is that participation in the present research was on a purely voluntary basis: it was also made clear to the individuals concerned that they were free to withdraw from the research at any point in time. No client did so. This point is not a pedantic one - if an individual chooses freely to be exposed to a particular treatment many of the ethical dilemmas do not apply. Szasz (1969) also acknowledges this point. The second point is that, insofar as it was possible, the clients were offered a way of seeing their beliefs and behaviour as being governed by the same processes that govern the behaviour of people in general. The extent to which they were set apart by a 'mental illness' was minimized. Third, it does not appear to be the case that without their delusions individuals 'inwardly collapse'. This claim is based on two sources of information; responses to the Beck Depression Inventory, and the clients' own verbal reports. Results on the BDI offered no suggestion that the loss of a delusion had a detrimental effect on clients. Indeed, quite the opposite trend was observed: in the cases of each of the ten clients whose belief conviction fell during the course of the intervention phase, his or her BDI score fell also. In nine of these ten cases during the follow-up period the BDI scores either continued to fall or remained at the same level as at the close of the intervention. Only in the case of BP was the highest BDI score not observed during the baseline phase, and even here this appeared to be due to his own efforts at belief modification. It would therefore appear that the loss of a delusion has a general beneficial impact on clients (cf. Milton et al., 1978, discussed in Chapter III).

Further evidence for the beneficial nature of the present study was provided by the clients' verbalizations made during the study. Although three clients (BP, BG and HM) reported finding the verbal challenge initially quite stressful, these three and many other clients soon began to report experiencing the benefits of the intervention. Having rejected his three delusions BP reported at one point feeling 'absolutely great, like I did before I was ill'. At

one of her independent assessments BG reported feeling 'tons better' as a result of the interventions. At his independent assessment MM reported feeling more relaxed as a consequence of the intervention. HM reported that the intervention had been very beneficial and felt that something like it should have been attempted sooner. DR's community psychiatric nurse observed that he seemed far less anxious as a result of participation in the present study: workers involved with TD and HJ made similar comments. At his independent assessment EE reported being more relaxed as a result of his new-found doubt as to the truth of his belief.

It might be argued that although the present research has clear benefits clinically, it is not viable practically for clinicians to expend so much time and energy on one client. However, there is a good case for suggesting that belief modification can and should be attempted. The first point is that it provides an alternative treatment to medication: many of the clients in the present study had been tried on a multitude of medications which had little or no effect on their delusions. The second point is that there appears to be the potential for instigating a major improvement in the clients well being. Third, the effects can be achieved in a relatively small number of sessions, sometimes as few as four. Is it unreasonable to expect this kind of resource outlay? Fourth, the benefits appear to be very long-lasting: future research will need to address just how long-lasting, and to determine whether infrequent 'booster' sessions can extend these benefits still further. Fifth, a treatment which enhances the clients' ability to regulate their own behaviour is of obvious clinical utility and would fit well with an emphasis on rehabilitation.

The present research was designed to harness and extend the developments made in measuring and modifying delusional behaviour. Much work remains to be done in both domains. As understanding of the nature of delusional behaviour improves no doubt some of the measures employed in the present research will need to be refined and new measures will be required. Although the verbal challenge and reality testing interventions show promise, the component analysis started in the present research is

by no means complete. Part of the future analysis of these techniques may well involve their application to individuals newly diagnosed as deluded. It is to be hoped that the approach to delusional behaviour adopted in the present research proves to have been a useful step along the way to a fuller awareness of how best to benefit people with delusional beliefs.

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