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Evaluating the benefit of implementing 'motivation modification' prior to 'belief modification' in the treatment of delusional beliefs in clients with psychosis.

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ABSTRACT

Cognitive-behaviour therapy was used in an attempt to modify the delusional beliefs of six clients with psychosis. It was hypothesised that the empirically vindicated "belief modification" (BM) package (Chadwick & Lowe, 1994) would benefit from being augmented by a "motivation modification" (MM) package which focuses directly on the client's motivation to change.

Using single-case methodology, these two cognitive therapies were employed in different phases over two conditions. Three clients received MM therapy before BM therapy, and three clients received BM therapy before MM therapy.

Belief conviction was reduced in four of the six participants, whilst two participants demonstrated no change in belief conviction. The results tentatively indicate that clients receiving MM before BM demonstrated a greater reduction in belief conviction than clients receiving BM before MM.

The implications of these results are discussed, and it is argued that motivational issues play an important role in the maintenance of delusions. Future research directions are forwarded for deriving useful models of underlying processes involved in using motivation modification as an adjunct to belief modification.

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INTRODUCTION

Psychological approaches to delusions: A review of the literature.

Delusional beliefs have traditionally been regarded as a symptom of schizophrenia, and as such, have typically been the domain of psychiatry, with treatment usually involving chemical interventions. Since the early 1900s, delusions have been regarded, along with most other clinical features of schizophrenia, as largely inaccessible to verbal modes of treatment (c.f., Garety, 1985; Milton, et al., 1978).

Recently, there has been a growing call for the way in which the term 'schizophrenia' has been defined and implemented to be re-evaluated. Many researchers (e.g., Bentall, 1993) now regard the concept of 'schizophrenia' as unhelpful. Schizophrenia, it is argued, is a badly designed concept which encompasses too broad a range of different symptoms to provide any meaningful information about any of its component features. The term 'schizophrenia' has prevented the individual components of the illness from being viewed as independent phenomena, and has for many years limited the way in which delusional beliefs were treated.

The recent thrust away from viewing delusions merely as a symptom of schizophrenia has resulted in the development of a variety of psychosocial treatments aimed at modifying delusional beliefs (e.g., Birchwood & Tarrier, 1992; Fowler, Garety & Kuipers, 1995). However, it is perhaps ironic that whilst the research on psychological treatments for delusions had, until recently, been somewhat limited (Chadwick & Lowe, 1990), the results of the few early studies (using cognitive behavioural treatment) had been very promising (e.g., Hartman & Cashman, 1983; Milton et al., 1978; Watts et al., 1973).

A further hindrance to the progress of psychological treatments for delusional beliefs may stem from the unhelpful way in which delusions have been typically defined. An early definition by Jaspers (1913) promoted the view that delusions were maintained in spite of compelling counter-arguments, and were impervious to modification. Forty years later, the position had changed little. Cameron (1959) and Freud (1950) hypothesised that delusions resulted from the psychodynamic defences of denial and projection to deal with primitive, unconscious material and to avoid personality disintegration. Since delusions were viewed as the product of a hypothetical inner

motivational system, they were considered as epiphenomena not susceptible to direct modification (c.f. Hole, et al., 1979). The authors argued that if corrective interventions were attempted, ego disintegration and psychotic regression were likely.

Additional reasons behind the failure to view delusions from a cognitive perspective may have derived from a preoccupation with potential 'reactance', in which an opinion becomes more firmly entrenched when directly confronted (e.g., Brehm, 1976; Watts, et al., 1973), or 'symptom substitution' (Reber, 1985), in which the presenting feature manifests itself in one or more other clinical problems. Early approaches to the psychological treatment of delusions did not seem to recognise that a degree of short-term distress is not unusual in changing well-ingrained habits, however maladaptive. As Dykman (1979) states, *"Change is alien to our current sense of self; lifelong habit patterns, good or bad, are comfortable."* (p.169). Indeed, with much therapy, the client experiences some short-term distress, because the projected long-term gain is considered substantial (for example: exposure therapy, withdrawal from addictions, etc.).

The definition of delusions as fixed and unmodifiable persisted until relatively recently, and many writings from the '60s and '70s have often seemed little more than a re-statement of Jaspers's position (e.g., Hoenig, 1968). In 1979, Mullen offered a definition of delusions in which he argued that delusional beliefs were not amenable to reason or modifiable by experience. He further noted that delusional beliefs were characterised by being wholly distinct from the beliefs of a non-clinical population.

Many other theorists have argued against conceiving of delusions as existing on a continuum with normal beliefs, favouring a discontinuity model (c.f., Garety, 1985). This discontinuity model tended to conceptualise delusions as static, unmodifiable, and unidimensional. It is against this inauspicious backdrop that the relatively recent success of cognitive-behavioural interventions for delusions, and concurrent theoretical advances, has moved the definition of delusions towards a more fluid, modifiable, and multi-dimensional conceptualisation (e.g., Chadwick & Lowe, 1994; Chadwick et al., 1996; Garety, 1985). Several authors have now stressed that the specific processes involved in the development and maintenance of delusions seem similar to the processes involved with normal beliefs. Maher (1988) argued that, *"the cognitive processes whereby delusions are formed differ in no respect from those by which non-delusional beliefs are formed"* (p. 20). Such similarities have provided a theoretical justification for conceiving

delusions as *potentially modifiable beliefs.* In this way, traditional criteria have been challenged by an exciting call to define delusions as points on a continuum with normality. Strauss, (1969) proposed that delusions should be thought of as points on this continuum, the position being influenced by dimensions such as the client's degree of conviction that the belief was true, and the extent of preoccupation with the belief.

As well as stressing continuity, this new perspective also places great emphasis on the individual and on individual differences. It is for this reason that the use of single-case research design has become relatively well-established in studies conducted within the delusional population. Single-case research design is able to combine experimental control with the power to reveal individual diversity, and seems well-suited to research into delusional beliefs, which are often characterised by their high degree of individuality. The advantages and disadvantages to single-case design are discussed in more depth later.

<u>The success of cognitive behaviour therapy in treating delusions.</u>

Since the early 1960s, a variety of different types of cognitive and behavioural therapies has been used successfully to modify delusional beliefs. (Reviews of this literature, in which a psychotic symptom was modified in a single case, are provided by Hemsley, 1986; Slade & Bentall, 1988; and Tarrier, 1992). The results from these studies were promising, although preliminary. Two of the reports were case studies (Johnson, et al., 1977; Rudden, et al., 1982), and appropriate experimental controls were lacking in others (Hartman & Cashman, 1983). Alford (1986) evaluated a belief modification procedure within an A-B-A-B single subject design, and obtained a moderate treatment effect for reported frequency of delusional ideation. However, the interpretation for rated strength of belief was problematic since there was essentially no increase in belief strength during the return to baseline conditions.

More recently, case-series and controlled trials have provided firmer support for the efficacy of cognitive-behaviour therapy in treating the symptoms of psychosis (Chadwick & Lowe, 1990, 1994; Fowler & Morley, 1989; Lowe & Chadwick, 1990). Using single-subject methodology with replication procedures, the Chadwick & Lowe studies claim that attempts to modify beliefs which involved verbal challenges and behavioural experiments were effective in reducing the intensity of beliefs in 10 out of the 12 subjects

treated over the course of their three studies. Follow-up assessments demonstrated that treatment gains were stable, with minimal symptom replacement.

A review of this literature reveals two chief procedures for the modification of delusional beliefs. One involves a set of procedures that avoids direct confrontation, evaluates the evidence for a belief, and encourages subjects to articulate arguments against their own beliefs (e.g., Alford, 1986; Chadwick & Lowe, 1990; Hartman & Cashman, 1983; Lowe & Chadwick, 1990). These are typically described as 'belief modification' procedures. The second approach involves a confrontational reality-testing verbal approach in which the delusional beliefs are directly challenged by the therapist. In attempting to modify delusional beliefs, Milton et al., (1978) compared the effects of a belief modification approach against an approach which involved direct confrontation of belief systems. The confrontation procedure began with the most strongly held belief and involved an almost invasive reality-testing approach. The therapist was firm in his insistence that the subject's belief was false, and that no evidence existed to support the belief. Conversely, the belief modification procedure started with the least strongly held belief, and involved an examination of alternative explanations for the subject's belief, together with encouragement for the subject to elaborate upon these alternatives. The results revealed that both procedures were successful in slightly decreasing the intensity of delusional beliefs immediately following treatment. However, a significantly greater reduction in belief intensity was apparent in recipients of the belief modification approach at a six-week post-treatment assessment. The results also revealed that the confrontation procedure increased the intensity with which delusions were held in four out of seven subjects at post-treatment. The authors maintain that this was evidence of psychological reactance.

Reality testing procedures do not, however, necessarily imply a strong confrontational approach. Rudden et al., (1982) contended that verbal intervention strategies involving appropriately timed reality testing and indirect belief modification procedures may prove effective in altering delusional ideations. Unfortunately, they offered only very brief case study material as support for these assertions. However, a similar approach used by Chadwick & Lowe has provided extensive empirical support for a treatment package developed out of this early literature regarding belief modification (Chadwick & Lowe, 1990, 1994; Lowe & Chadwick, 1990).

Chadwick & Lowe's belief modification (BM) package.

As outlined above, belief modification consists of two components, verbal challenge and reality testing. Using a clearly specified procedure, Chadwick & Lowe (1994) report some reduction in the strength of delusional beliefs in 10 out of 12 subjects.

In their study, Chadwick & Lowe's belief modification package pursued cognitive change through a combination of verbal challenge and planned reality testing (Beck et al., 1979). The verbal challenge was comprised of four main elements. Firstly, to minimise the likelihood of psychological reactance (Brehm, 1962) the evidence for the delusional belief was challenged; the order in which each piece of evidence was challenged was inversely related to its importance to the delusion (see Watts et al., 1973). An integral part of this discussion involved the therapist making clear to individuals how beliefs which are strongly held can exert a profound influence over their behaviour and interpretation of events. Secondly, the internal consistency and plausibility of the belief system was questioned, and all irrational or inconsistent features were highlighted. Thirdly, following Maher, an alternative interpretation was offered, namely that the belief was formed in response to, and as a way of making sense of, specific experiences and important life events. Lastly, the individual's delusion and the therapist's alternative were assessed in the light of available information.

The main feature of the reality testing intervention was that it involved the individual planning and performing of an activity which could invalidate the delusion, or some part of it (Hole et al., 1979). Beck et al. (1979) called such activities "behavioural experiments", conveying that they were to be performed in order to test a hypothesis. In this sense, the reality testing stage corresponds to the "collaborative empiricism" approach used in cognitive behaviour therapy (Beck, 1976).

The primary purpose of both empirical testing and verbal challenge is to bring about cognitive change, and this seems to be achieved best when the two approaches are combined. Nevertheless, the efficacy of verbal challenge alone, in the absence of a reality-test, *has* produced beneficial results when used individually. Lowe & Chadwick (1990) used verbal challenge to successfully eliminate the delusional beliefs of two clients. The same *cannot* be said of reality-testing. The results from Chadwick et al.'s (1994) study suggested that reality testing alone was a weak intervention, producing

temporary or insubstantial effects, *"perhaps because strongly held beliefs are 'immunised' against disconfirmation (Popper, 1977)"* (p. 364).

In an earlier study, Chadwick & Lowe (1990) had already argued that the efficacy of both verbal challenge and reality-testing was greatly enhanced when the two interventions were combined into one treatment package. They demonstrated that when it follows verbal challenge, reality testing can be an effective intervention even when verbal challenge has little or no impact on belief conviction. Similarly, when verbal challenging was added to an unsuccessful reality-test treatment package (Chadwick & Lowe, 1994), belief conviction in three out of four subjects was substantially weakened.

In tandem, these two studies provide support for the assumption that reality-testing is more effective when it follows a period of verbal challenge (Trower, et al., 1988). Chadwick & Lowe (1994) also noted that in both studies, either combination of reality testing and verbal challenge was effective, regardless of which approach was used first. Finally, Chadwick & Lowe were able to refute the common hypothesis that reality testing was the most powerful way of weakening beliefs (e.g., Piasecki & Hollon, 1987), and stressed the importance of preceding reality-testing with preparatory cognitive therapy.

A possible enhancement to the belief modification package

Throughout their studies, Chadwick & Lowe (1994) have emphasised the idiosyncratic nature of delusional beliefs, and the importance of individual differences both in terms of the nature of the beliefs, and in the process and outcome of change. However, their BM package does not directly address the clients' co-existing "meaning network" (what the world means to the client) from which the belief can be said to have originated and by which it is maintained. In addition, whilst remaining partially non-committal, Chadwick & Lowe (1990) argue that the success of BM *"does not support the view that delusions are the result of motivational factors"* (p.230). However, the BM package may be regarded as having facilitated changes in a client's network of meaning through experience, and thus changed the functionality of the client's delusion.

Buss & Craik (1983) argue that a delusional belief can be usefully regarded as being defined and maintained by its position within the client's idiosyncratic meaning network. To this extent, it is suggested that it may be possible to change the strength of an individual's delusional belief (or else its amenability to modification) without actually

addressing the core belief directly. For example, if some of the functions of a delusional belief were supplied through other means, one would logically hypothesise that the delusional belief would have less value to the individual, and therefore be more modifiable. Consequently, it may prove useful to augment the Chadwick & Lowe (1990) package with a further therapeutic component, "*motivation modification*", a concept first introduced by Nightingale (1996), which explores the maintaining factors of a delusion from within the meaning network in which the belief is embedded. Such a package would attempt to reduce the functional value of the delusion, and attempt to provide alternative beliefs which the client would regard as more functional.

The components of this motivation modification (MM) package would initially consist of a broad assessment which would attempt to elucidate the advantages and disadvantages for the client in changing from a delusional belief to a non-delusional belief (c.f., Goldiamond, 1975). Then, through the use of cognitive behaviour therapy, the factors pushing the client *away* from the desired change would be reduced. It is contended that what constitutes MM will differ with each individual client. However, some techniques (described in more detail during the procedure) involve boosting self-esteem, increasing the number and range of alternative pleasurable activities, reducing the amount of any perceived secondary gain the client might derive from holding the delusional belief, boosting the client's desire to engage in a reality-test of their beliefs, and changing dysfunctional assumptions that might stand in the way of change.

The intuitive reasons for using MM as an adjunct to BM are persuasive. However, definitive empirical support is still lacking. Nightingale (1996) combined BM and MM in the treatment of one client with a series of inter-related delusional beliefs. The combined package appeared to increase the variance in the strength of the client's delusional beliefs, and reduce the client's level of depression. However, at the end of the study the client's delusions were as firmly fixed as they had been throughout the study. Nightingale (1996) contended that the results did not imply that the belief was unmodifiable, *"rather the author failed to solve the puzzle"* (p.2). The results from this study were limited by the lack of any baseline measures, and by the inclusion of only one client in the design. Given that the Nightingale (1996) study involved only one case, it would be premature to draw too many conclusions as to the value of MM as an adjunct to BM.

Aims and hypotheses

The current study attempts to further explore the value of a treatment package which combines BM and MM therapy by conducting a series of six single case designs, across two distinct conditions. In order to fully assess the therapeutic implications for the design, the research aims to specify as clearly as possible both input (in terms of client characteristics and intervention procedures), and output (the effects of the intervention, using multiple measures). It is contended that such clarity in specification will be useful in terms of collecting valuable empirical data, and will assist in the development of a progressive theoretical framework for delusional beliefs. It is anticipated that the use of multiple monitoring measures, as well as keeping track of change, will be of value in developing useful hypotheses as to the way beliefs are maintained.

It is thus hypothesised that by conducting MM before BM, the impact of a therapeutic package designed to reduce the degree of conviction of delusional beliefs would be enhanced. Consequently, it is hypothesised that the levels of anxiety, preoccupation and degree of belief conviction will be lower at the end of treatment amongst participants receiving MM before BM. It is also hypothesised that by attempting to fully address motivational factors concerning a client's engagement with the therapeutic procedure, both psychological reactance and symptom substitution will be less evident amongst subjects whose BM had been preceded by MM. For the same reason, it is also anticipated that the clients' reported levels of satisfaction with therapy will be higher amongst those participants receiving MM therapy before BM therapy.

In this study, clients with delusional beliefs will be separated into two groups. Following a baseline period for all subjects, clients in condition 1 will receive cognitive therapy in three phases: MM, BM then MM. Clients in condition 2 will receive the same treatment, but in the order BM, MM then BM. In this way, the importance of treatment order in therapy will be assessed. In particular, it will be possible to ascertain not only whether the effect of BM is enhanced when preceded by MM, but also whether MM is still able to enhance the effect of BM after sessions of BM therapy have been conducted. Consequently, it may be possible to determine whether or not there is any merit in introducing MM into a therapeutic process that has already started, or whether any benefits to introducing MM occur only when it is used prior to BM.

Summary of hypotheses.

The key hypotheses of the study are:

1. That "belief modification" is a more effective intervention for weakening the strength of delusional beliefs when preceded by "motivation modification".

2. That more progress will also be made in reducing clients' levels of depression when "belief modification" is preceded by "motivation modification" than when it is not.

3. That psychological reactance and symptom substitution will be lower in clients receiving "motivation modification" before "belief modification", than in clients receiving "belief modification" before "motivation modification".

4. That the levels of anxiety and preoccupation associated with the delusional belief will be lower at the end of treatment in clients receiving "motivation modification" before "belief modification" than in clients receiving the same treatment in reverse order.

The use of single-case research design.

The research will employ single-case design methodology. There are numerous advantages to single-case design (for an overview see Barlow et al., 1986), including its sensitivity to individual variability. In the area of delusional beliefs, this focus on the idiosyncrasies of the client seems particularly apt, many researchers having remarked on the highly individual nature of most delusional beliefs (e.g., Kendler et al., 1983). Single-case research methodologies provide excellent opportunities for clinical psychologists not only to demonstrate the effectiveness of a particular intervention, but also to explore new hypotheses and approaches to presenting problems on a scale that is manageable, convenient, relatively speedy and which has the capacity to provide data that are potentially rich in both qualitative and quantitative significance.

Single-case designs have been used with some success by a number of researchers in the psychological treatment of delusional beliefs (e.g., Chadwick & Lowe, 1990; Himadi & Kaiser, 1992). Indeed, single-case methodology can perhaps be regarded as the

experimental method of choice in this area. As Chadwick & Lowe (1994) note, "*One of the most striking aspects of our findings on the modification of delusions was the very individual nature of the process and outcome of change, and for this reason we strongly favour the use of sophisticated single-subject methodology in this field*". (p.358).

Single-case research designs are sometimes criticised for their failure to obtain measures of extremely high quality. While the quality of measurement is the cornerstone of the single-case design, this does not necessarily mean that *all* measures must be of high quality. Rather than abandon the attempt to be systematic because measurement procedures cannot meet some arbitrarily high standard, it is considered better to take measures that *are* possible while simultaneously recognising their limitations. As Barlow et al., (1986) state, the power of single-case experimental designs derives largely from an emphasis on replication. No single case is a 'critical experiment'; it is the overall picture that is important.

A number of ethical issues arise when conducting single-case research designs. For the purposes of this study, these include (but are not limited to) imposing baseline phases on clients who may require immediate treatment, or withdrawing active ingredients from the treatment program of a client who is seen to be improving. These are complex issues not easily solved, but there is a flip side to these arguments which is, of course, the question of whether it is ethically right *not* to monitor the effectiveness of treatment.

A summary of the components of the treatment package

Before progressing to the method, it may be useful at this point to summarise the components of the two conditions. A more detailed account of the exact specifications of both MM and BM is presented later, in the procedure. A very brief overview is given below:

(A) Motivation Modification (MM)

MM attempts to move clients from a fear of "*what if my beliefs aren't true*" towards a less threatened state of "*so what if my beliefs aren't true*". More specifically, following Nightingale (1996), the aim is to increase the client's reasons for wanting to change from delusional belief 'A' to adaptive belief 'B', and to decrease the client's reasons for not wanting to make this change.

One of the key assumptions of MM is that each client has their own idiosyncratic way of viewing the world. Hence, the precise functions which a delusional belief serve are specific to the individual. As a result, what comprises MM will vary from client to client, depending upon what function the belief serves within a particular client's meaning network. However, many of the techniques used with a given client will often be generalisable to other clients.

(B) Belief Modification (BM)

In essence, BM focuses directly on the evidence supporting the belief, as opposed to the motivation.

The initial phase of BM concerns *verbal challenge* of beliefs, and in many ways overlaps with cognitive therapy aimed at any belief deemed maladaptive (Beck, 1976). Verbal challenge involves disputing the accuracy of a belief, and encouraging the person to generate alternative interpretations according to the evidence. The second phase involves augmenting verbal challenge with *reality testing*, in which an activity is performed which either validates or invalidates a belief, or part of a belief.

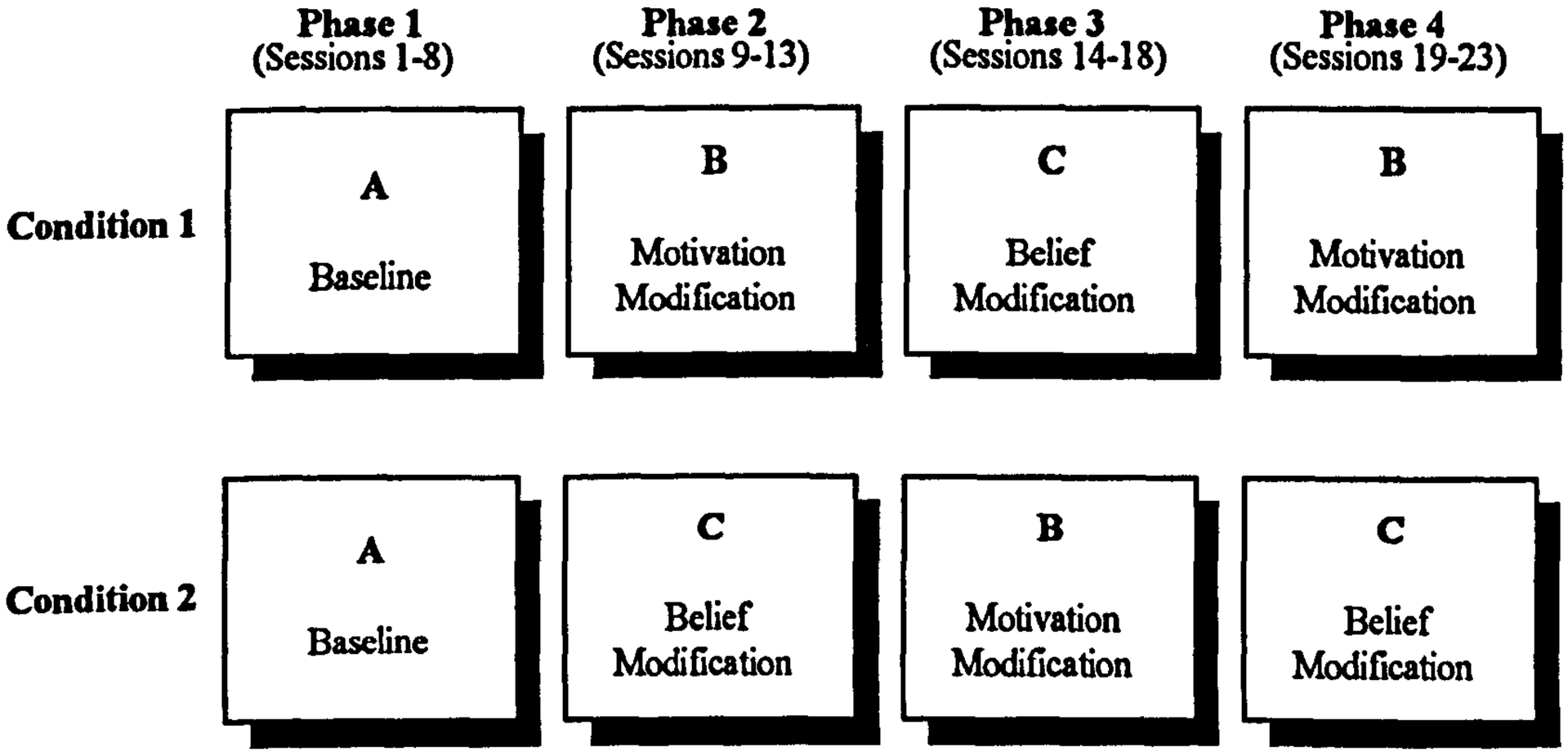
METHOD

The current study recruited only those clients for whom chemical interventions had not proved wholly effective, and whose delusional beliefs persisted despite drug treatment. In this sense, cognitive behaviour therapy was used as an adjunct to drug therapy, and did not seek to replace it (see also Hartman & Cashman, 1983).

Design

As outlined in the introduction, six clients were divided into two groups of three, each group following alternate phases (Figure 1.). Following the baseline phase, Motivation Modification was introduced to clients in condition 1, followed by Belief Modification, then Motivation Modification, an **A-B-C-B** design. Clients in condition 2 followed an **A-C-B-C** design over the same length of time.

Figure 1. The four phases of the design, differentiated by the two conditions.



Given the importance of establishing a stable baseline, phase one was longer than the other phases, lasting eight sessions. Each subsequent phase lasted five sessions.

Validation of the intervention

In order to clarify whether there were the distinct phases of intervention which the design necessitates, a randomly chosen session from each phase was taped, featuring a randomly selected subject. The tapes were then posted to two independent clinical psychologists, to whom the nature of the phases had been explained, and who had been given a summary of the components of BM and MM as outlined at the end of the introduction.

These blind-raters were then asked to rate the sessions as either "BM", "MM" or "Undecided". The results demonstrated both raters were able to adequately differentiate MM from BM. This is discussed in more detail later.

Participants

Participants were recruited with the assistance of the clinical supervisor. All clients were referred to the author for assessment and possible inclusion in the research project. Every client referred had been formally diagnosed as suffering from a psychotic illness, of

which delusional beliefs were an integral feature. Permission for the inclusion of all clients was sought (and granted) from the consultant in charge. Clients were sent an initial letter briefly explaining the nature of the research, and inviting them to a session which assessed their suitability for inclusion in the treatment program. Details of the assessment are outlined later in the procedure.

A number of referred clients were excluded from the study. One client had received changes to his medication within the past 12 weeks. This client was excluded because it was felt that there would be a difficulty in determining whether the cause of any subsequent change in delusional state was a result of the current intervention or a result of the change to medication. One client whose delusional belief had persisted for less than two years was also excluded, so as to reduce the possibility of recruiting a client whose symptoms might be transient. One referred client was deemed to be thought disordered, and was excluded because it was felt that the client could not provide informed consent to participation in the study. Finally, one client was excluded from the study because previous performance on psychometric tests, combined with evidence from psychiatric notes, suggested a borderline learning disability. Inclusion of this client was considered to be inappropriate in a study concerned solely with an Adult Mental Health population.

At the end of the assessment, six clients were enrolled into the project. Diagnoses for these clients were initially taken from psychiatric notes, which were later confirmed by the author at interview. For all clients, the psychiatric notes indicated no evidence of organic aetiology. The ages of participants ranged from 27 to 46; five of the six participants were male. Brief descriptions of each participant are provided below:

1. Participant C.J.

CJ was an unemployed 36 year old male, who was living with his parents. He had been educated to degree level in electrical engineering. After leaving university, he had worked for nine years at three different civil aviation companies designing and testing aeroplanes. Over the last six years he had become convinced that he was the victim of a government conspiracy aimed at preventing him from talking about his sensitive knowledge of aircraft design. Whilst working for the aircraft manufacturers, he became convinced that government agencies were introducing 'thought-disrupting' chemicals

into his coffee. He eventually left work following a breakdown. When his symptoms did not improve, he concluded that similar mind-altering chemicals were being added to his water supply, his washing-up-liquid, and his food. In conjunction with this, he believed that government agencies were inserting 'thought-monitoring' chips into his head while he was asleep.

CJ once believed that the conspiracy was ubiquitous, involving friends, parents and mental health professionals. At the time of referral, however, he had believed for over two years that none of these people were involved in the conspiracy; instead, CJ was worried that his family and friends were in danger of being targeted by the government in the same way. His BDI score was 17, indicating moderate depression, using the classification criteria of Williams (1992).

2. Participant S.N.

SN was a 33 year old unemployed male, living alone. For the past seven years, he believed that the IRA had been monitoring his activities in a number of ways (e.g.: phone-tapping, following him in cars, bugging his house). SN believed that the IRA was collecting data about him, and that once they had gathered all the information they required, they were going to kill him. He believed that he had attracted the attention of the IRA because he was essentially an evil person, who contaminated anybody in his presence.

SN also heard voices, which were usually of a persecutory nature. The voices would usually compound his belief that he was "the worst person in the world", and were mollified only when SN performed a series of bizarre routines (such as cycling for over five miles in order to pass over a special white line in the road).

SN had a long psychiatric history extending over 20 years, which had been characterised by obsessive behaviour, magical thinking and feelings of inadequacy. However, at no point was he described as suicidal. On referral, SN had a BDI score of 26, placing SN at the lower end of the 'severe depression' category.

3. Participant B.N.

BN was a 46 year old male, living alone, having recently moved out of a residential 'rest home'. BN had been admitted to the psychiatric ward of his local hospital 15 years

ago, following the collapse of his business which had resulted in BN suffering a succession of breakdowns.

Since his original admission into hospital, BN had been re-admitted over 10 times in an attempt to moderate his unstable, and often florid, symptoms of psychosis. These included dressing up as a soldier and parading through town, arguing with other people and inanimate objects, and minor sexual indiscretions. For approximately the past three years, BN had become convinced that he was being followed by an unknown man, whose ultimate goal was to kill him. He believed that the man was sending him messages surreptitiously via public signs and the television, which were designed to scare him. For example, BN would re-interpret a street-sign saying "*lay-by*" into "*Bye*", with the underlying belief that it was a threatening message from the unknown person. He was also convinced that television announcements and car licence plates were laden with sinister messages from the unknown man.

At the time of referral, BN's BDI score was 13, suggesting a mild level of depression.

4. Participant A.F.

AF was a 27 year old unemployed male, living with his parents and sister. He had been diagnosed as schizophrenic five years ago, when he reported hearing voices. For the past four years, he had believed that he was able to communicate with aeroplane pilots and cabin crew, and that he could alter the flight path of these aeroplanes at will.

AF also believed that he could communicate with radio personalities by talking to them via the radio. He claimed to know all the disc jockeys on Radio 1 on a personal level, and spent many hours each day talking to them. AF found his beliefs rewarding, and did not perceive them in any way as problematic. However, his beliefs sometimes seemed all-encompassing to his family and social worker, and were felt to be preventing AF from finding employment and from developing suitable social skills.

Upon referral, AF had a BDI score of 4, which was within the normal range.

5. Participant R.S.

RS was a 36 year old unemployed female who lived alone. She had a psychiatric history extending over eight years, which had been characterised by severe depression (for which she had received E.C.T.), obsessive behaviour, and delusional beliefs.

RS believed that she had been abducted from her true family at the age of 3, and that her real parents were members of the titled nobility. She was unsure of their exact identities, and had written many letters to various lords and aristocrats, asking if she was their lost daughter. She expressed mixed feeling towards the parents with whom she had grown up, ranging from affection to anger and resentment with widely varying intensity. At the time of referral, she had not spoken to her parents for over three years.

On assessment, RS scored 28 on the BDI, indicating severe depression.

6. Participant P.L.

PL was a 31 year old unemployed male, who lived alone. Approximately four years ago, he came to believe that his life was a dream from which he was unable to wake. He believed that in reality, he was the son of an Arabian sultan, and was sleeping in a palace. He stated that he somehow knew that his extended sleep was a source of great concern for all those at the palace, and that there were many experts trying to wake him from his dream. However, he stated that their attempts were futile, and that he would not wake from his dream until the year 2000, although he did not know why this was the case.

PL's psychiatric notes indicated a diagnosis of schizophrenia, and emphasised that PL would frequently suffer from periods of extreme apathy. On referral, PL's BDI score was 14, indicating mild depression.

The participants were distributed randomly between the two conditions (Table 1).

Table 1. The distribution of participants between condition 1 and condition 2

Condition 1: (MM, BM, MM)	Condition 2: (BM, MM, BM)
Participant AF	Participant CJ
Participant BN	Participant RS
Participant SN	Participant PL

Measures

Almost all researchers in this area have found personal questionnaires useful in obtaining a scaling of the specific problems of individuals. The use of personal questionnaires for the measurement of delusions is described in detail by Garety (1985). All measures for this study were taken at the end of each session.

1. Accommodation measure (obtained every session).

Following Brett-Jones, Garety & Hemsley (1987), and Chadwick & Lowe (1990), clients were asked whether anything had happened since the last session to alter their belief in any way. This measurement is designed to assess the client's awareness of confirmation and disconfirmation of their belief once therapy is underway, and so reveal something of the way in which delusions are maintained.

2. Phillips's (1977) modified version of Shapiro's (1961) Personal Questionnaire (administered at every session).

Following Garety (1985) and Chadwick & Lowe (1990), each belief was measured separately, using Phillips's (1977) modified version of Shapiro's (1961) Personal Questionnaire (PQ) (Appendix 1). The PQ is a means of measuring:

(a) The degree of conviction that a belief is true.

(b) The degree of belief preoccupation.

(c) The amount of anxiety activated by thinking about the belief.

The PQ monitors change in symptom intensity specific to an individual subject. Clients were offered five statements of increasing levels of intensity regarding their beliefs, and in each case the statements had been accepted as valid descriptions. The five statements for each measure were written on separate pieces of card. On administration, each card was presented randomly, and the client was invited to say whether the intensity was more or less than was stated on the card. 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.

3. Hole et al.'s (1979) percentage rating of belief conviction (obtained at every session).

Clients were asked to rate how sure they are that their delusional beliefs are true. Ratings are between 0 and 100, where 0 = "definitely false" and 100 = "definitely true".

Several authors have noted the multidimensionality of delusional beliefs (Brett-Jones, Garety & Hemsley, 1987; Hole, Rush & Beck, 1979). Conviction or strength of belief, however, is the most characteristic and reliable feature of delusions (Himadi et al., 1991; see also Brett-Jones, et al., 1987).

4. Reaction to Hypothetical Contradiction (RTHC) (obtained every two sessions).

Following Chadwick & Lowe (1990), clients were asked how it would influence their belief if a hypothetical contradictory event occurred. RTHC is a promising way of measuring susceptibility to change, and has been used extensively in the treatment of delusional beliefs (see Chadwick & Lowe, 1994). A client's potential for accepting disconfirmation is assessed by presenting a hypothetical event that is inconsistent with the delusion; the individual is asked how, if at all, such an occurrence would alter the delusion.

Secondary measures

To monitor some of the possible wider effects of the interventions, a number of further measures were used.

5. Beck Depression Inventory (BDI).

Administered every two sessions. The BDI is a broad measure of depressive symptoms, consisting of a 21-item scale. It has high internal consistency, and high convergent validity with interviewer ratings of depression severity (Beck, Steer & Garbin, 1988). The scores from the BDI were translated into ratings (normal range, mild, moderate and severe depression) in accordance with the BDI manual.

6. Beck Anxiety Inventory (BAI).

Administered every two sessions. The BAI is a well-standardised tool designed to measure the impact of a number of symptoms of anxiety. It was administered in order

to assess for unwanted effects of change. Scores range from 0 to 63 on a 21-item scale, and as with the BDI, internal consistency is high.

7. Self-ratings (0-100), administered every session.

(a) Mood (0 = extremely depressed, 100 = extremely happy).

(b) Self-esteem (0 = as low as it's ever been, 100 = as high as it's ever been).

This series of additional measures was viewed as having the potential to elucidate the relevance of MM, and facilitate useful hypotheses as to the process of change. Moreover, responsibility to the clients dictated that the effects of treatment be closely monitored (see Barlow et al., 1986).

Procedure

Having obtained Ethical Approval from the Health Authority Ethics Committee, six participants were recruited (as outlined above). The nature, procedure and purpose of the research was fully explained to the potential subject during the initial meeting. This initial session also provided the client with the chance to ask any questions about the research, and the opportunity to decide whether or not they wished to participate in the treatment program.

In the initial letter, and during the initial session, the client was informed that aspects of their sessions would be used as part of a research project. They were guaranteed anonymity and were informed that they would be free to withdraw from the program at any time. When both the client and the investigator decided that participation in the study was appropriate, and that the client's symptoms might be modified from inclusion in the study, the client was invited to sign a consent form (Appendix 2). Upon signing the consent form, the client was seen as part of the clinical psychology service for clients with delusions.

Participants were seen twice weekly, and sessions were as evenly spaced as possible (for example, Monday and Thursday, Tuesday and Friday). Sessions were conducted at two venues in the community, and lasted approximately one hour. For all clients, the baseline stage commenced within three weeks of the initial assessment for suitability, and in each case, medication was held constant for the duration of the study.

Procedure for Baseline

Throughout this phase, as much relevant data as possible on the nature of the belief were collected, with special interest being paid to the evidence, both past and present, that 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 the belief, and were asked to rank them in order of importance to the belief system. At no point during the baseline session was any attempt made to challenge or re-interpret the client's beliefs or reasoning.

Procedure for Belief Modification

Throughout this phase, the client was encouraged to view the 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 differing accounts. Initially, following Watts et al. (1973), the evidence for the belief was challenged in inverse order of importance. In each case, the author proposed an alternative to the client's delusional interpretation of events. An integral part of this discussion involved the investigator making clear to the clients the way in which beliefs, once formed, influence the future interpretations people place on events (Fowler et al., 1995; see also Vygotsky, 1962).

After the evidence had been dealt with, the discussion moved on to challenging the belief itself. Again, the stance was non-confrontational. Challenging the belief was carried out in three stages. First, any inconsistency and irrationality within the client's belief system was highlighted. As Chadwick & Lowe (1994) explain, this was tantamount to asking *"Would it really make sense for things to be as you say they are?"*. The client was then presented with alternative explanations 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 proposed that the author's account was the better explanation of the client's experiences.

For all subjects except BN, simple verbal challenge alone was not persuasive enough to change any of the subjects' minds with regard to their delusional belief. Thus, in these cases, the author attempted to devise a simple test in collaboration with the client (see

Hole, et al., 1979). An important principle behind the reality testing was that the client agreed in advance that the chosen task was a genuine test of the belief.

It proved possible to reality-test the beliefs of only three clients. The author was unable to negotiate a definitive reality-test with participant CJ, who stuck resolutely to his beliefs. He refuted any of the author's alternative interpretations of the evidence, and was unable to formulate any alternatives of his own. The author was not able to negotiate a definitive reality test with participant BN, and participant PL dropped-out of the study after session 12, before reality-testing took place.

Procedure for Motivation Modification

The initial aim was to attempt to gain as much information as possible as to what, *other than evidence*, was sustaining the clients' beliefs (Nightingale, 1996). Some of the information needed for this phase was gathered during the baseline sessions, although it was necessary in all cases to conduct sessions during which supplementary information was collected. Sessions focused on attempting to elucidate questions such as:

(i) What would be the advantages and disadvantages for the client, if their belief system changed?

(ii) What would make it easier for the client to change their beliefs?

This focus began during the first session of MM, and continued until the final MM session of the phase.

Once sufficient data had been gathered in response to these questions, MM was implemented using a number of components. What constituted MM differed between clients. However, in an attempt to convey the kind of techniques involved, the MM package has been divided into five overlapping components. Examples of their application with a number of participants are described.

(a) Changing dysfunctional assumptions that stand in the way of change.

Some examples of these assumptions were:

- "If my beliefs are wrong, I've wasted the past seven years of my life" (Participant SN).
- "If my beliefs are wrong, I'm just a worthless 'nobody'" (Participant RS).
- "If my beliefs are wrong, I must be mad" (Participant AF).

In attempting to change such assumptions, a cognitive-behavioural approach was employed, similar to that used in treating depression (e.g.: Fennell, 1992). This involved offering clients a more adaptive interpretation, and attempting to convince them that this alternative explanation was more accurate and more useful.

(b) Boosting self-esteem through avenues other than the beliefs.

This component was aimed at providing alternative avenues to fulfil the hypothesised 'self-esteem boosting' role that the beliefs of RS, AF and CJ served. It also proved useful in establishing rapport, and securing these clients' commitment. This approach involved:

- Drawing out any positives, both past (such as CJ's academic success) and present (e.g., RS sold two of her paintings, and AF often helped his ailing grandmother).
- Re-framing the illness. All three clients agreed that they had felt worse, so it was stressed that the clients had come a long way, and had made progress.
- Emphasising areas in which all clients did have control (c.f., Seligman, 1974).
- Lowering unrealistic aspirations and planning achievable goals. For example, AF felt that the only satisfactory job was as a pop star or a professional footballer, so other areas of interest were explored. This approach also involved exploring whether RS *needed* to belong to the titled nobility in order to be proud or happy.

(c) Increasing the alternative pleasurable activities.

It was felt that the delusional beliefs of all clients had such role-defining functions, that one would be left wondering what would be left if the belief(s) disappeared. Hence, attempts were made to explore alternate pleasurable activities for clients which were independent of the beliefs.

The approach was similar to the 'Activity Scheduling for Mastery and Pleasure' program sometimes used in the treatment of depression (described in Hawton, et al., 1995). Clients were helped to schedule a pleasurable activity to do as homework, twice each week. Compliance with this part of MM was good, with the exception of CJ and PL who usually failed to complete their activity.

(d) Functional analysis of the delusional belief system

This involved questioning the clients in a non-threatening manner, regarding the possible benefits of holding their belief(s). Whilst all participants were unemployed, two participants (AF and CJ) stated during therapy that they derived satisfaction from the fact that their diagnoses excluded them from seeking employment. Thus, for these clients, MM focused more closely on negating issues of possible secondary gain from the illness.

(e) Increasing the client's desire to pursue the task of finding out whether or not their beliefs were true.

Clients were encouraged to collaborate with the author on a 'truth-finding mission', and try to overcome the perceptual biases that influence everybody. The rewards of such a mission were emphasised; for example, attempts were made to convince BN and SN to accept that they would be more likely to return to work (a mutual goal) if they were to find out that their attempts would not be inevitably thwarted by their perceived antagonists.

RESULTS

One of the main advantages of using single-case methodology is that it allows a detailed analysis of the individual. When data are amalgamated, the results can often obscure the idiosyncrasies of the individual. For this reason, the results are presented separately for each participant, followed by a more general synthesis.

Attendance rates were very high, with a total of just four sessions missed for all participants (SN - session 13; BN - session 7; PL - sessions 7 and 9). Consequently, data points have been omitted from the relevant graphs for these sessions.

Validation of effect

In accordance with the procedure, one randomly selected session from each phase (two sessions for the baseline stage) was recorded and sent to two independent raters for assessment. Fourteen of the sixteen sessions were correctly identified as either BM, MM or baseline (Table 2). Inter-rater reliability was high, and the two raters were in

agreement for all but two sessions. The difference between BM and MM seemed well demarcated, and no session was identified as BM by one rater and MM by the other.

Table 2. Results of the independent raters' evaluations of the distinct phases.

Session Number	Phase	Participant	Rater 1	Rater 2
Session 3	(Baseline)	AF	Baseline	Baseline
Session 7	(Baseline)	PL	Baseline	Undecided
Session 12	(MM)	AF	MM	MM
Session 12	(BM)	CJ	BM	BM
Session 14	(MM)	SN	MM	Undecided
Session 14	(BM)	RS	BM	BM
Session 20	(MM)	SN	MM	MM
Session 20	(BM)	CJ	BM	BM

Ratings for just two sessions were mismatched. Rater 2 reported that there were elements of MM in PL's seventh session which meant that the rater was unable to classify the session authoritatively. Similarly, rater 2 expressed uncertainty over SN's fourteenth session, which was conducted during the MM phase, but which the rater was unable to decide between "baseline" and "MM" for this session.

In terms of reliability, the figures are encouraging. Ideally, it would have been useful to have demonstrated reliability with more of the data, and through the use of more independent raters, together with a more thorough analysis of the individual ratings of the sessions. It seems likely that reliability could be increased by discussing instances where raters do not agree and refining procedural specifications, particularly for MM. However, much of the potential benefit of MM lies in its ability to be tailored to the individual, and attempts to standardise the approach must be mindful of this.

Notwithstanding, it is argued that the results from the independent analysis validate the effect of the intervention, and support the claim that the phases were discrete and distinct.

Condition 1

Participant AF

Belief conviction

AF maintained a stable baseline score of 100 per cent conviction that both his beliefs were true, and this was sustained throughout the first MM phase (Fig. 2-1). With the introduction of the BM phase, however, AF's degree of conviction began to fall rapidly. Within three sessions of the start of BM, his belief in his ability to change the flight paths of aeroplanes had fallen to zero, and his other belief had fallen to 20 per cent conviction. By the 19th session, both beliefs were at zero per cent conviction and stayed at this level for the remainder of the intervention.

Accommodation

AF did not report experiencing an external event had caused him to question his belief at any time throughout the duration of treatment.

RTHC and reality tests

AF was loathe to entertain suggestions that his beliefs might not be true, and his reaction to hypothetical contradiction indicated that his beliefs were very durable. For the first 11 sessions, he refused to acknowledge the existence of any scenario which would make him doubt his beliefs. However, towards the end of the first MM phase (session 12), AF finally accepted one of the author's suggestions, and agreed that it would constitute a definitive reality-test.

The test involved taking AF to the local airport and asking him to prevent the aeroplanes from landing, which he felt sure he would be able to do. When he failed, he expressed astonishment, and made two more unsuccessful attempts before informing the

Figure 2-1

Belief Strength (Percentage Conviction) against Session Number

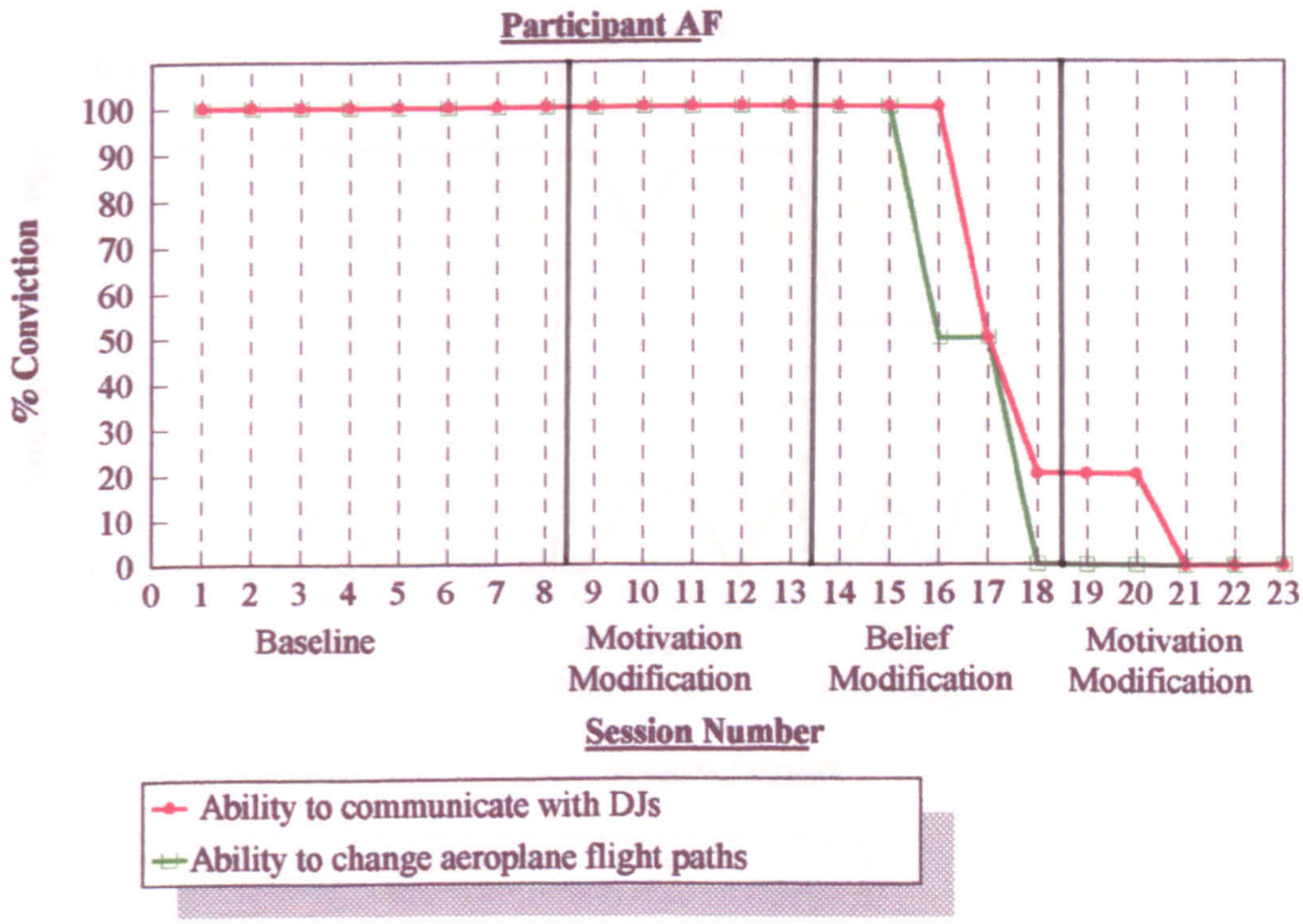


Figure 2-2

Inventory Score against Session Number

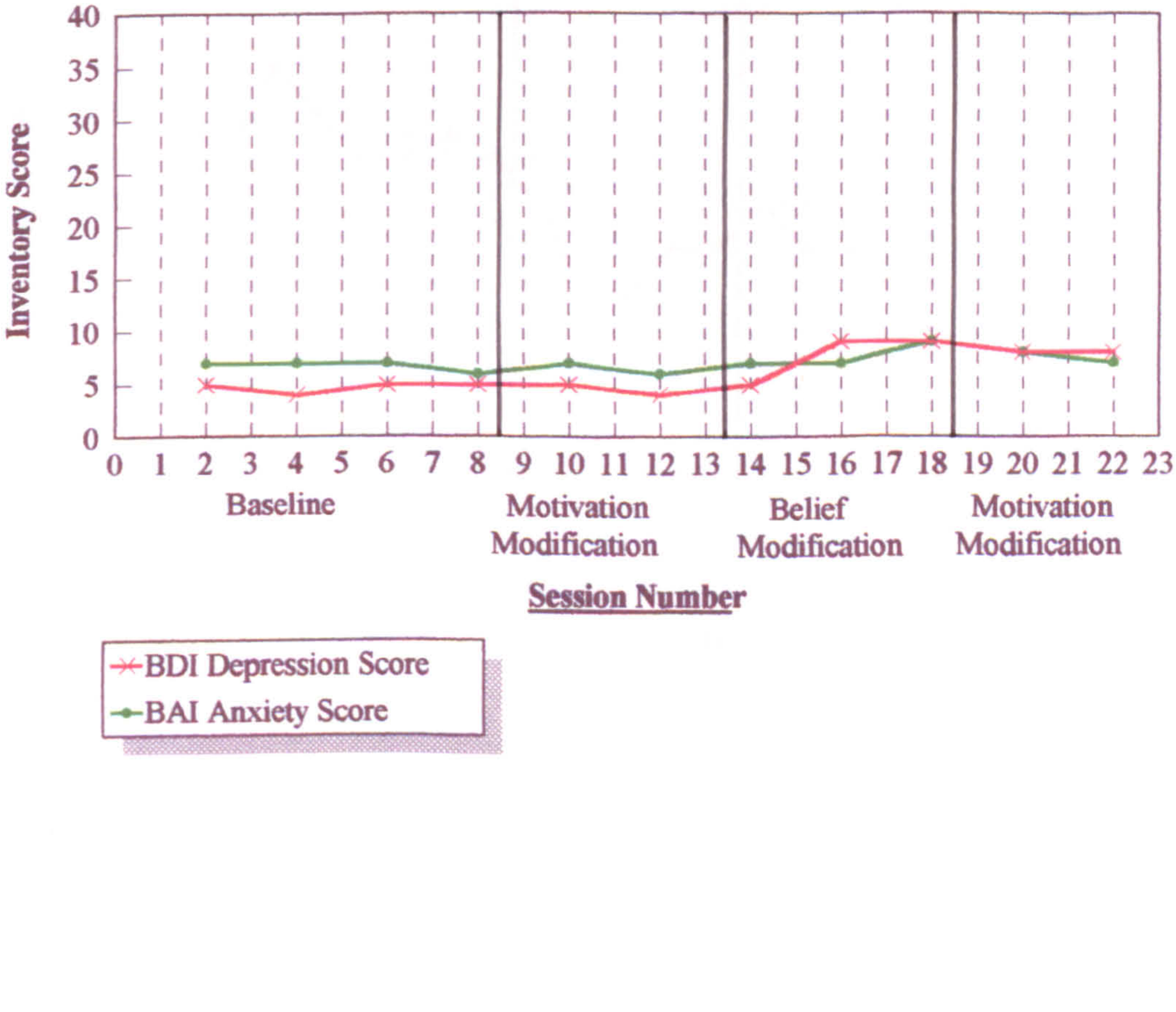


Figure 2-3

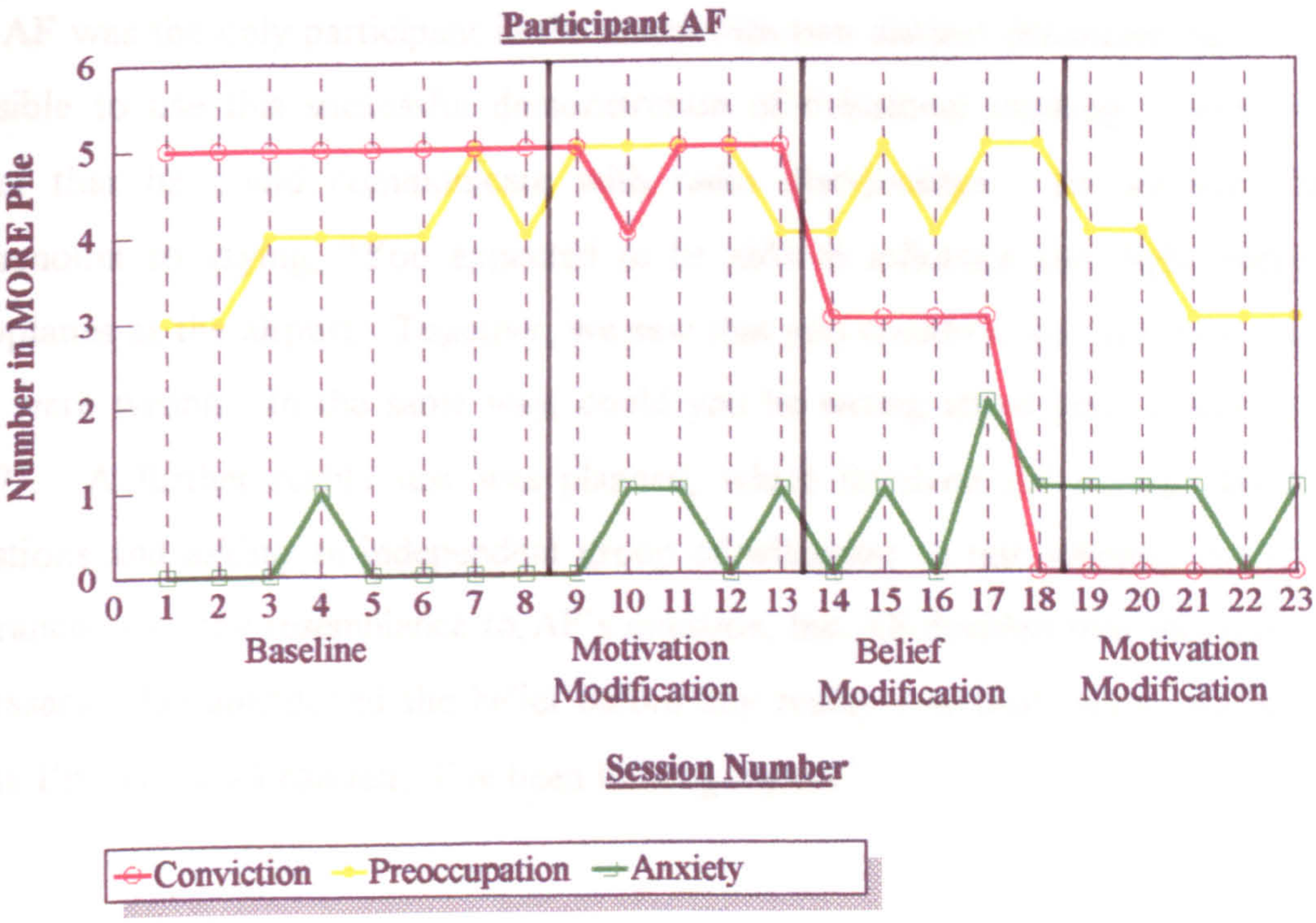
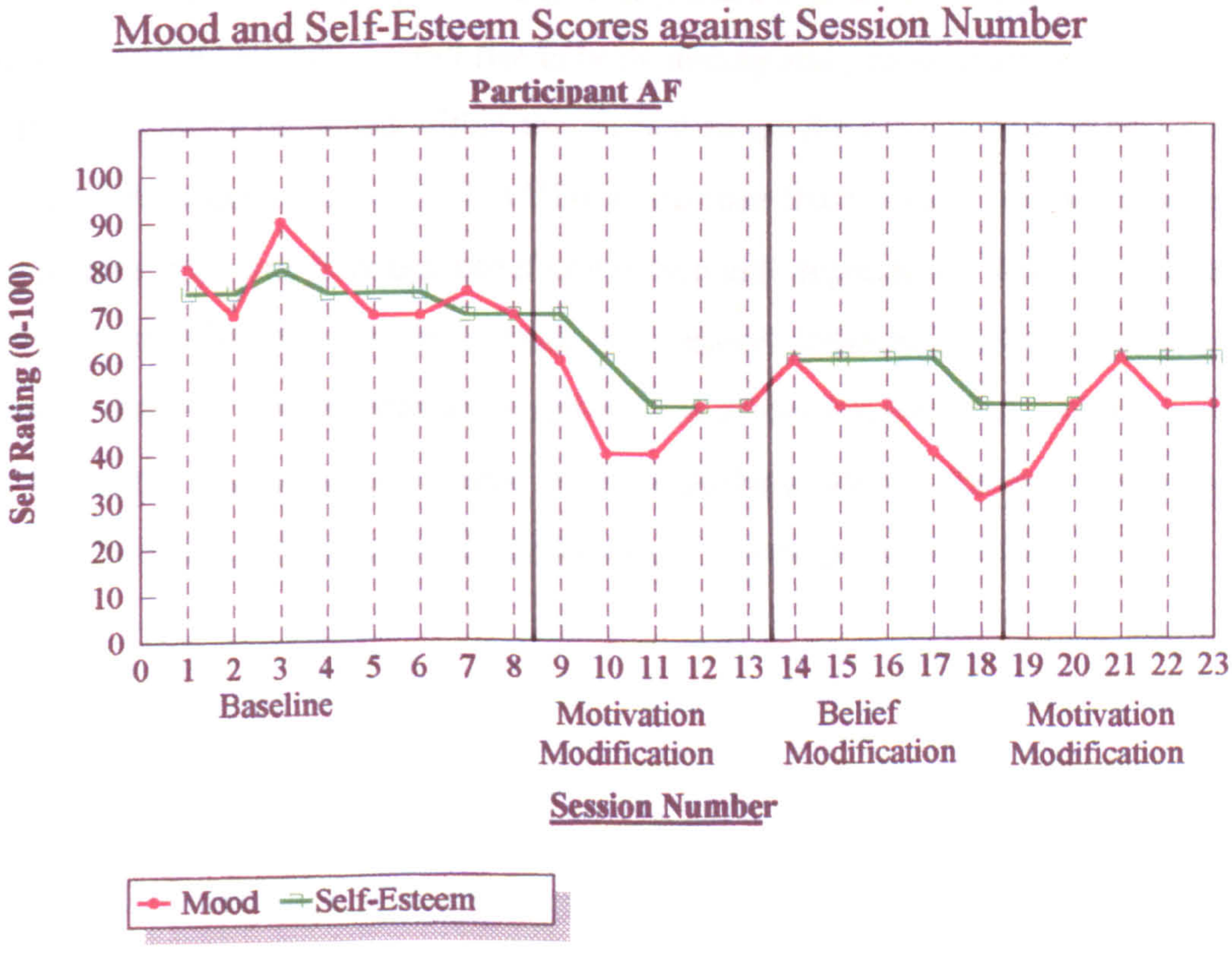


Figure 2-4



author that strength of his belief was "50:50". Within four sessions, his belief conviction was zero.

AF was the only participant in the study with two distinct delusional beliefs. It was possible to use this successful demonstration of delusional thinking against his other belief that he could communicate with radio disc-jockeys. In practice, this was tantamount to saying, "You expected to be able to influence the flight paths of the aeroplanes at the airport. Together, we saw that you couldn't, and you now agree that you were wrong. In the same way, could you be wrong about your ability to talk to DJs?". A further reality test was planned, which involved AF asking DJs a list of questions and asking an independent group of witnesses to rate whether the DJ's next utterance bore any resemblance to AF's question, but AF decided that this test was not necessary. He abandoned the belief before any reality test took place, stating "No, I know I'm wrong - I can tell. I've been kidding myself".

Secondary measures

Unlike belief conviction, there was more variation in AF's preoccupation and anxiety scores associated with the belief during the baseline phase (Figs. 2-2 & 2-3). However, after introducing the BM phase (at session 13), there was a clear increase in the variance of these measures, with an overall rise in both anxiety and preoccupation (Fig. 2-3).

AF's BDI score remained within the normal range for the duration of the treatment, as did his BAI score. However, the BDI score rose from 5 to 9 points during the BM phase, suggesting a link between belief conviction and depression. The rise in BDI score was closely matched by a drop in both AF's mood score and self-esteem (Fig. 2-4), suggesting that AF's belief held some self-esteem protecting function. AF's second MM phase addressed his rise in depressive symptomatology, and by the end of treatment his BDI score had stopped rising and had fallen back by one point (Fig 2-2).

Participant BN

Belief conviction

BN's belief conviction varied more than any other participant's during the baseline phase, fluctuating between 95 per cent and 70 per cent conviction (Fig. 3-1). However,

this was not considered to be so broad a variation that the figures were deemed unstable. The figures remained at around the 80 per cent level throughout the first MM phase, then dropped rapidly with the introduction of the BM phase, with the first BM session producing a drop of 30 per cent. The BM phase saw a continual decline in belief conviction, and by the end of the BM phase, BN's belief had fallen to 20 per cent conviction. During the final MM phase, Figure 3-1 indicates that the degree of belief conviction varied between zero and ten per cent.

Accommodation

BN reported no disconfirmatory evidence at any time during his baseline phase. For the remainder of the active phases, he reported experiencing two instances of disconfirmation at the start of sessions 15 and 18. For example, BN decided to visit his brother in Yorkshire. Whilst there, he noticed a number of potentially threatening car license plates (BN would interpose vowels between combinations of three consonants to generate upsetting words; for example, DTH became "Death"). As the decision to visit his brother had been on a whim, BN felt sure that his aggressor was unaware of his whereabouts. The existence of these licence plates in a town where the aggressor "could not have known" that BN would see them caused BN to doubt his belief that the licence plates were intended to scare him. In both cases of disconfirmation, belief conviction underwent a drop of 20 per cent in the subsequent session (Fig. 3-1).

RTHC and reality test

The author found it difficult to devise a clear means of demonstrating the fallibility of BN's belief that an unknown man was threatening him via street signs and the television. BN responded most positively to a hypothetical scenario in which the unknown man 'gave away' his identity, and when confronted by BN claimed that he never intended to threaten BN; instead, BN had inadvertently interfered with the man's attempts to threaten a neighbour. BN agreed that if this scenario occurred, it would cause him to reject his belief. However, this scenario was far from ideal, as it failed to challenge the belief that the unknown man existed at all.

The author was unable to devise a definitive reality test for BN. However, BN's belief proved more subject to modification using verbal challenge than had been

Figure 3-1

Belief Strength (Percentage Conviction) against Session Number

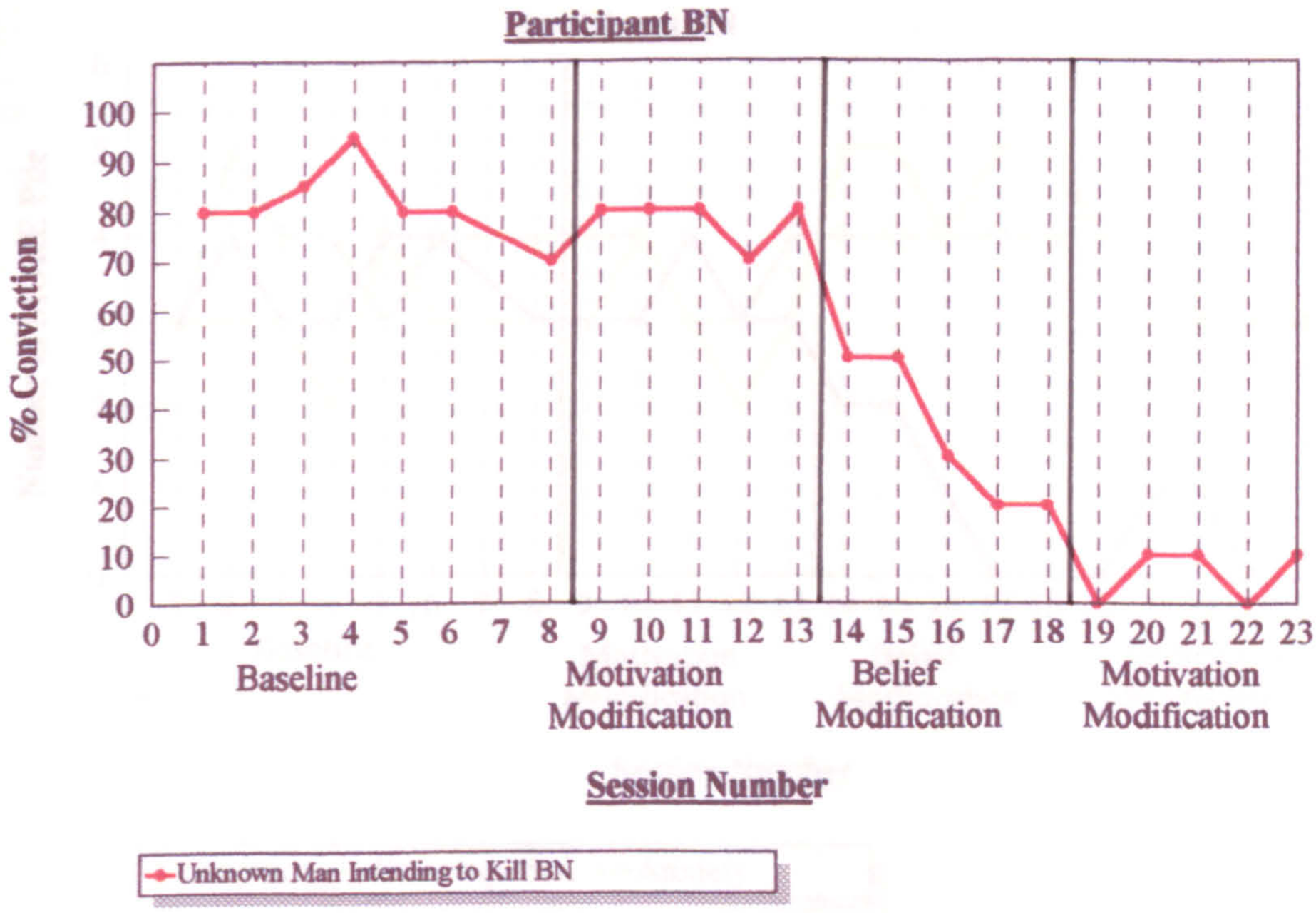


Figure 3-2

Inventory Score against Session Number

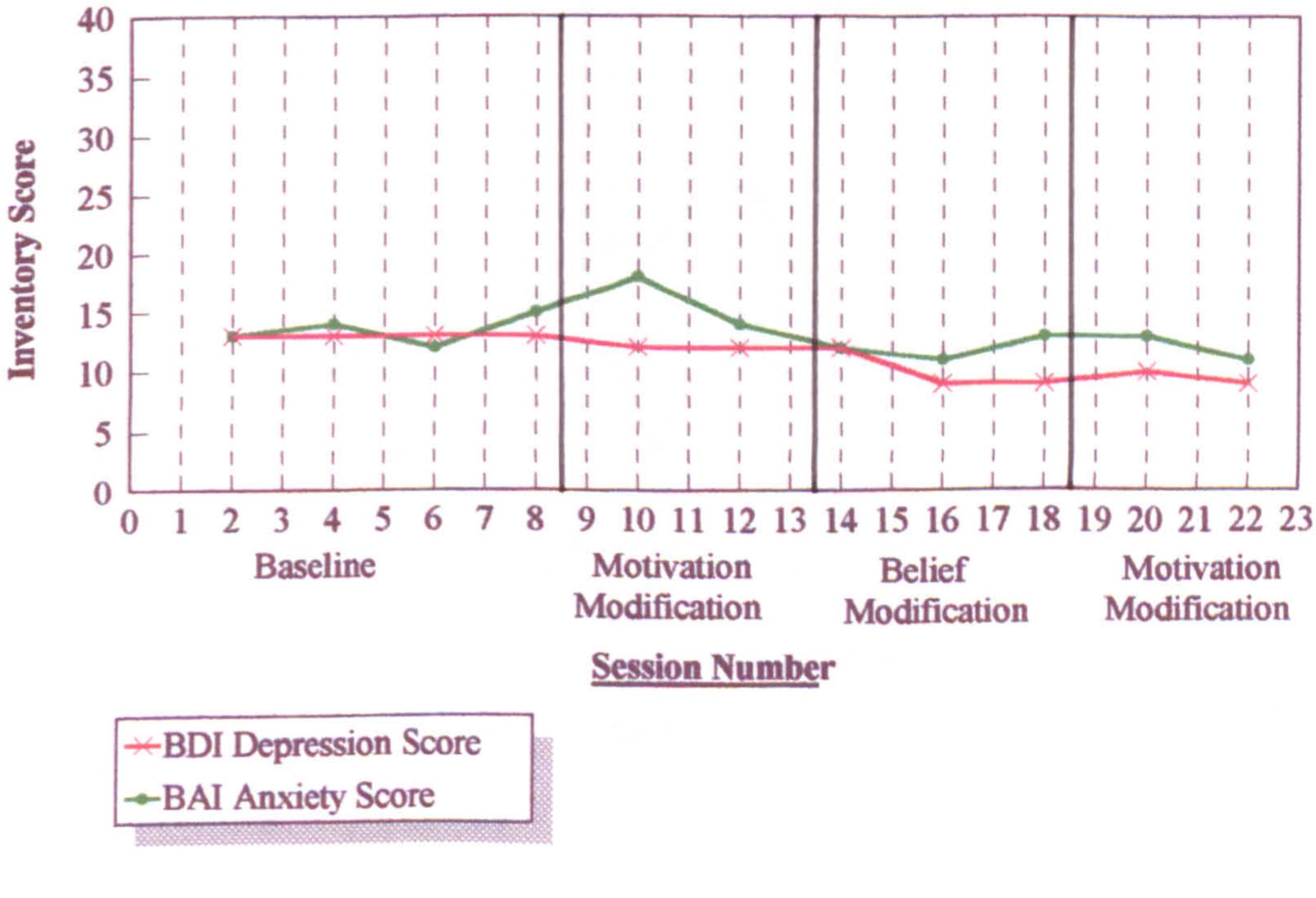


Figure 3-3

PQ Score against Session Number

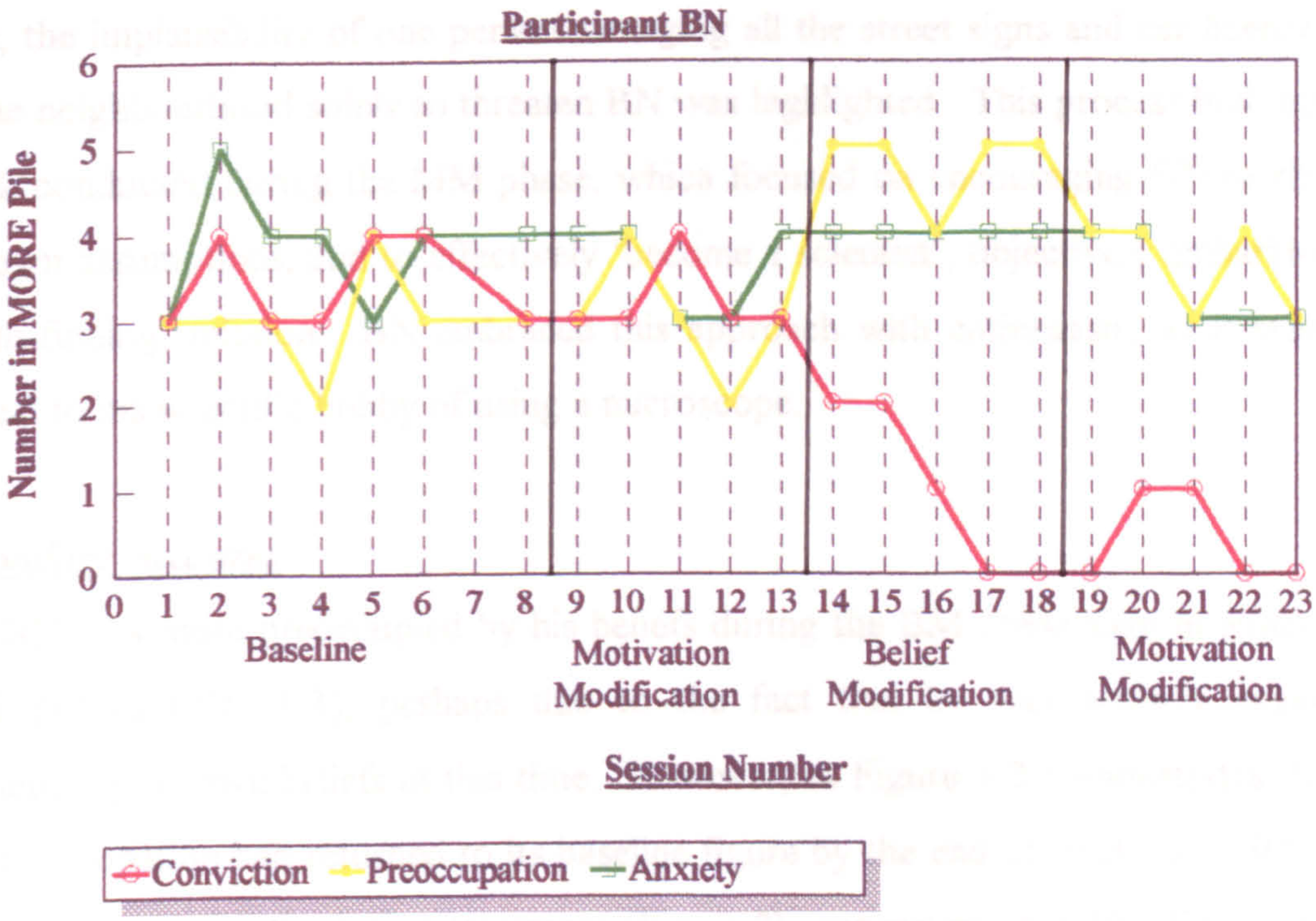
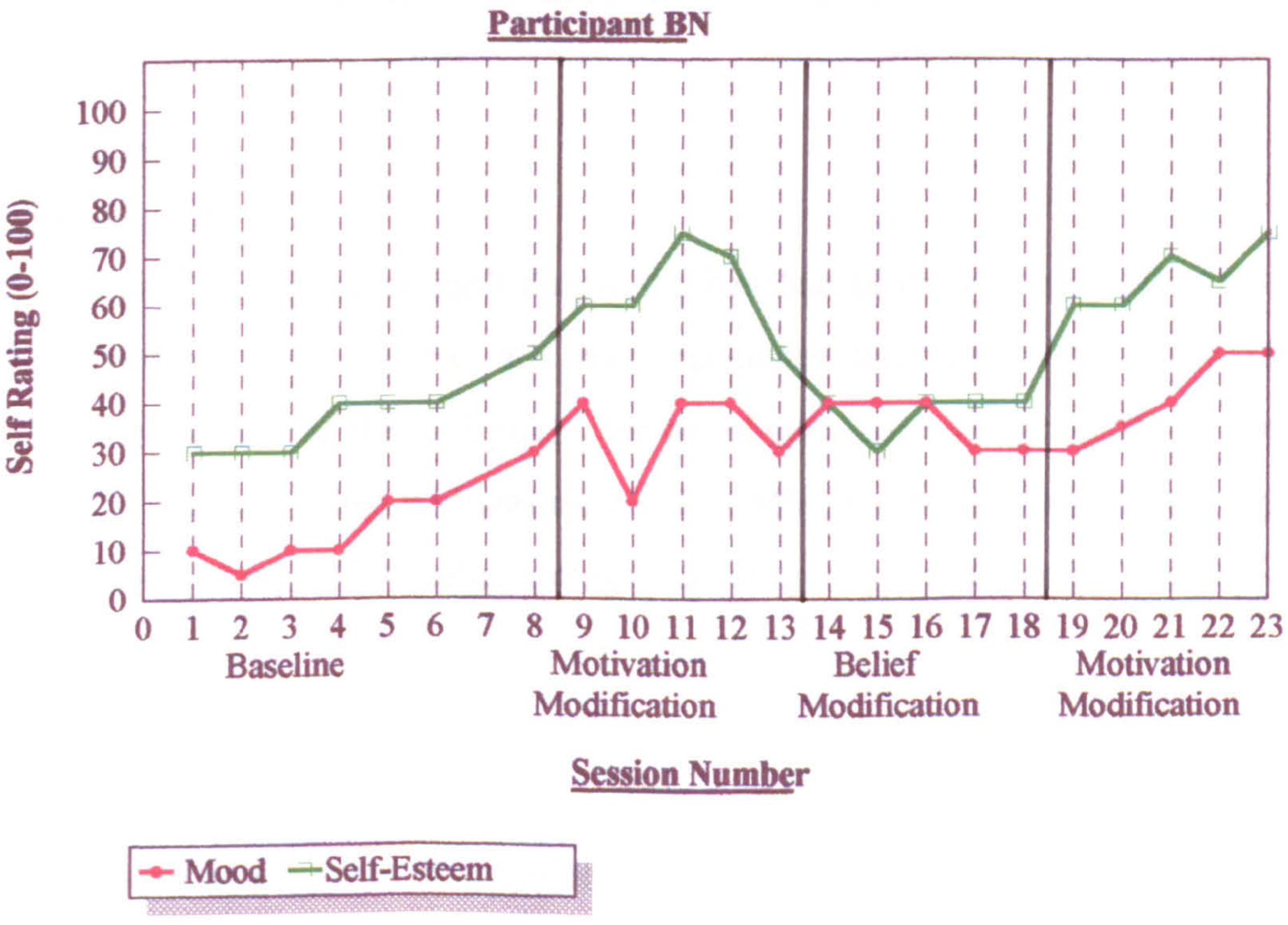


Figure 3-4

Mood and Self-Esteem Scores against Session Number



anticipated. Much of the verbal challenge phase involved exploring the feasibility of transmitting programmes specifically to BN's television and nobody else's. In the same way, the implausibility of one person arranging all the street signs and car licence plates in the neighbourhood solely to threaten BN was highlighted. This process built upon the work conducted during the MM phase, which focused on encouraging BN to challenge his own assumptions, and to effectively 'become a scientist', objectively embarking on a 'truth-finding' mission. BN embraced this approach with enthusiasm, as it seemed to appeal to his scientific hobby of using a microscope.

Secondary measures

BN was more preoccupied by his beliefs during the BM phase than in either of the MM phases (Fig. 3-3), perhaps due to the fact that he was actively engaged in challenging his own beliefs at this time. However, as Figure 3-3 demonstrates, his level of preoccupation had returned to its baseline figure by the end of treatment. BN's level of anxiety varied little during treatment (Fig. 3-2), suggesting that BN did not find the intervention particularly aversive. This is substantiated by BN's mood score (Fig. 3-4), which rose steadily throughout treatment, and a steady fall in his BDI score (Fig. 3-2). BN's self-esteem also rose steadily, despite a temporary fall during the BM phase, suggesting (as with AF) a link between belief conviction and self-esteem (Fig. 3-4).

Participant SN

Belief conviction

Although SN's belief strength during the baseline phase was only 60 per cent, this figure proved to be very stable, and was maintained throughout the first MM phase. With the introduction of the BM phase, the belief conviction fell gradually to the 40 per cent mark. However, when BM was replaced by MM, the belief strength rose again, and treatment finished with SN's belief strength showing no overall change since the start of treatment.

Accommodation

SN reported no instances of an event causing him to doubt his beliefs.

Figure 4-1

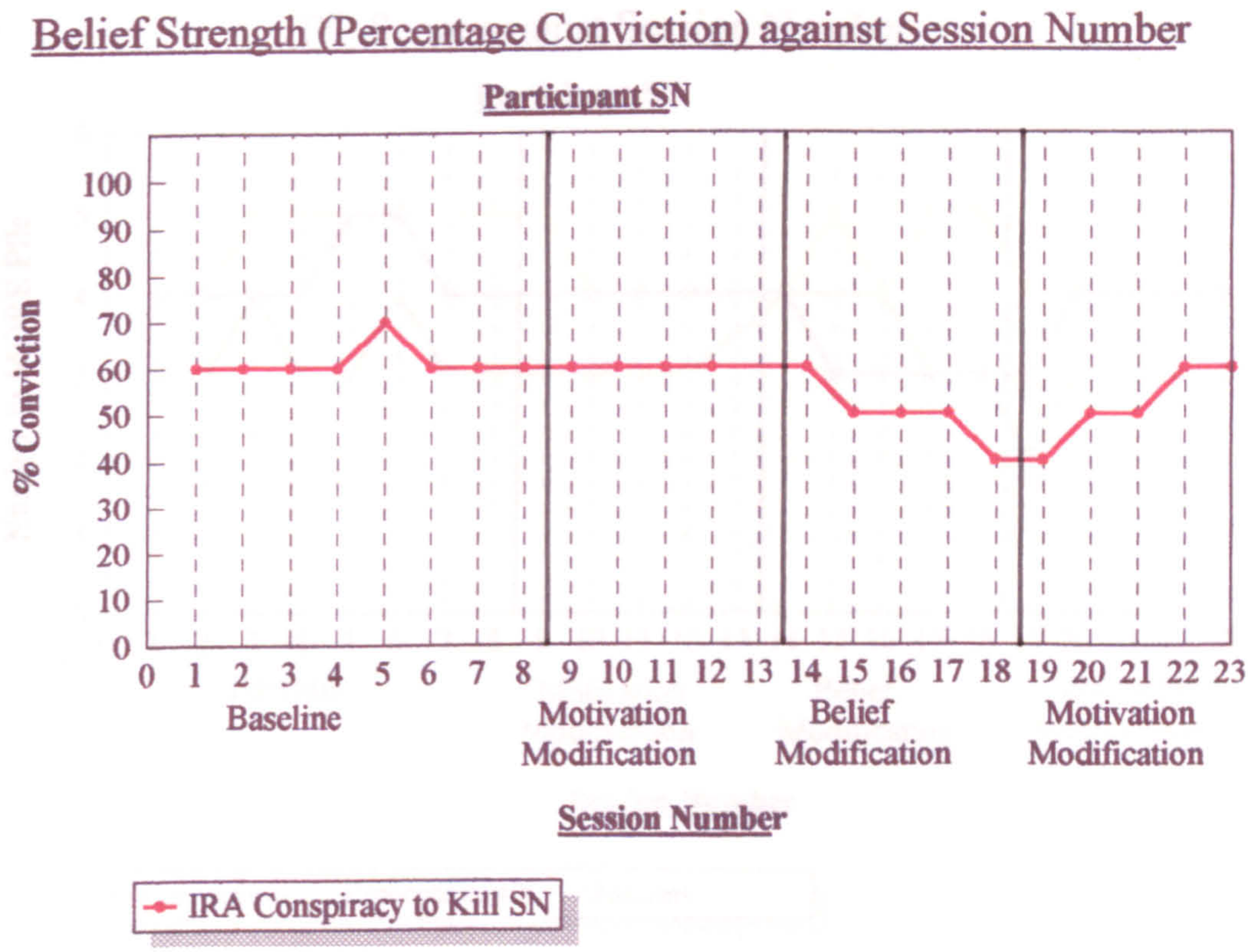


Figure 4-2

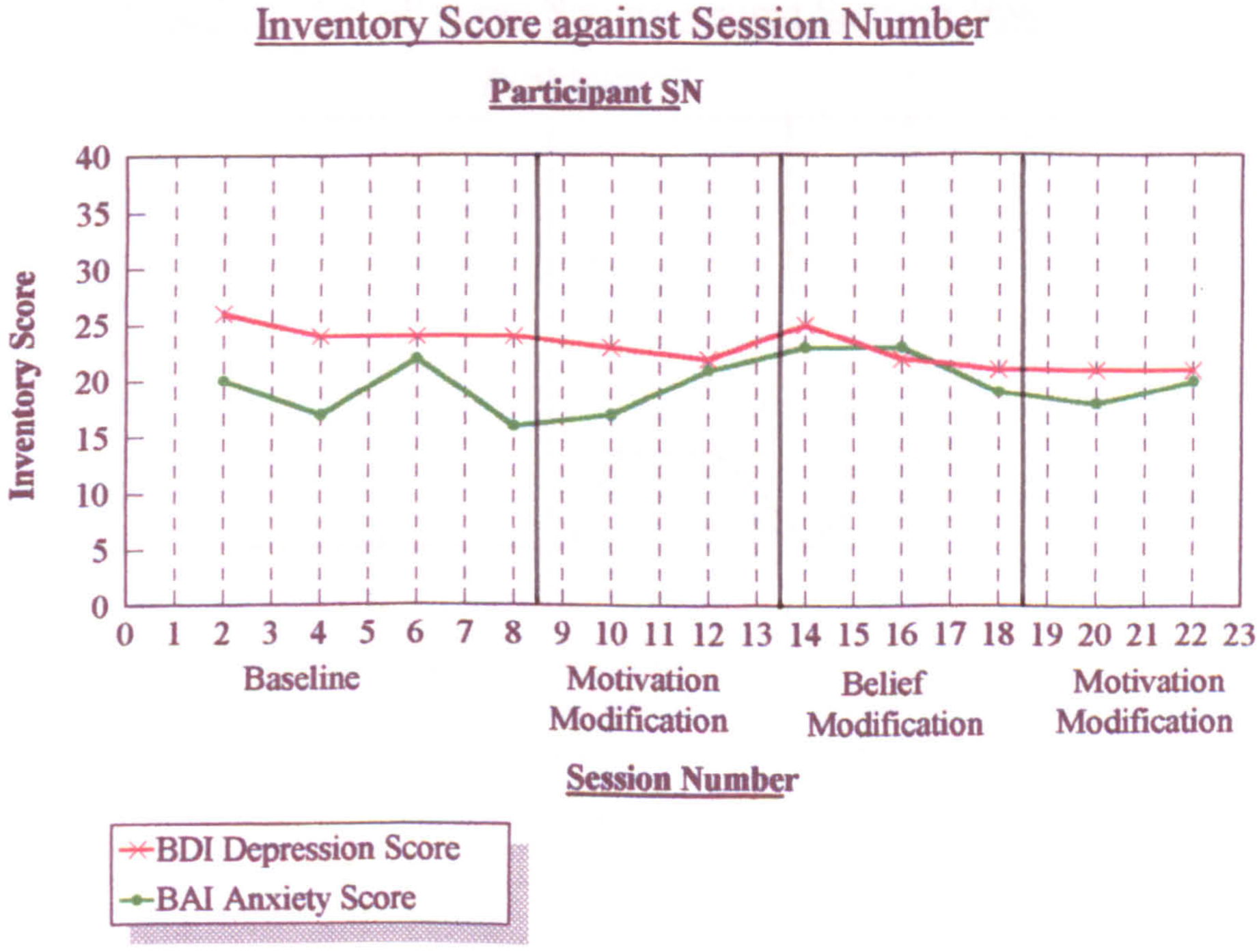


Figure 4-3

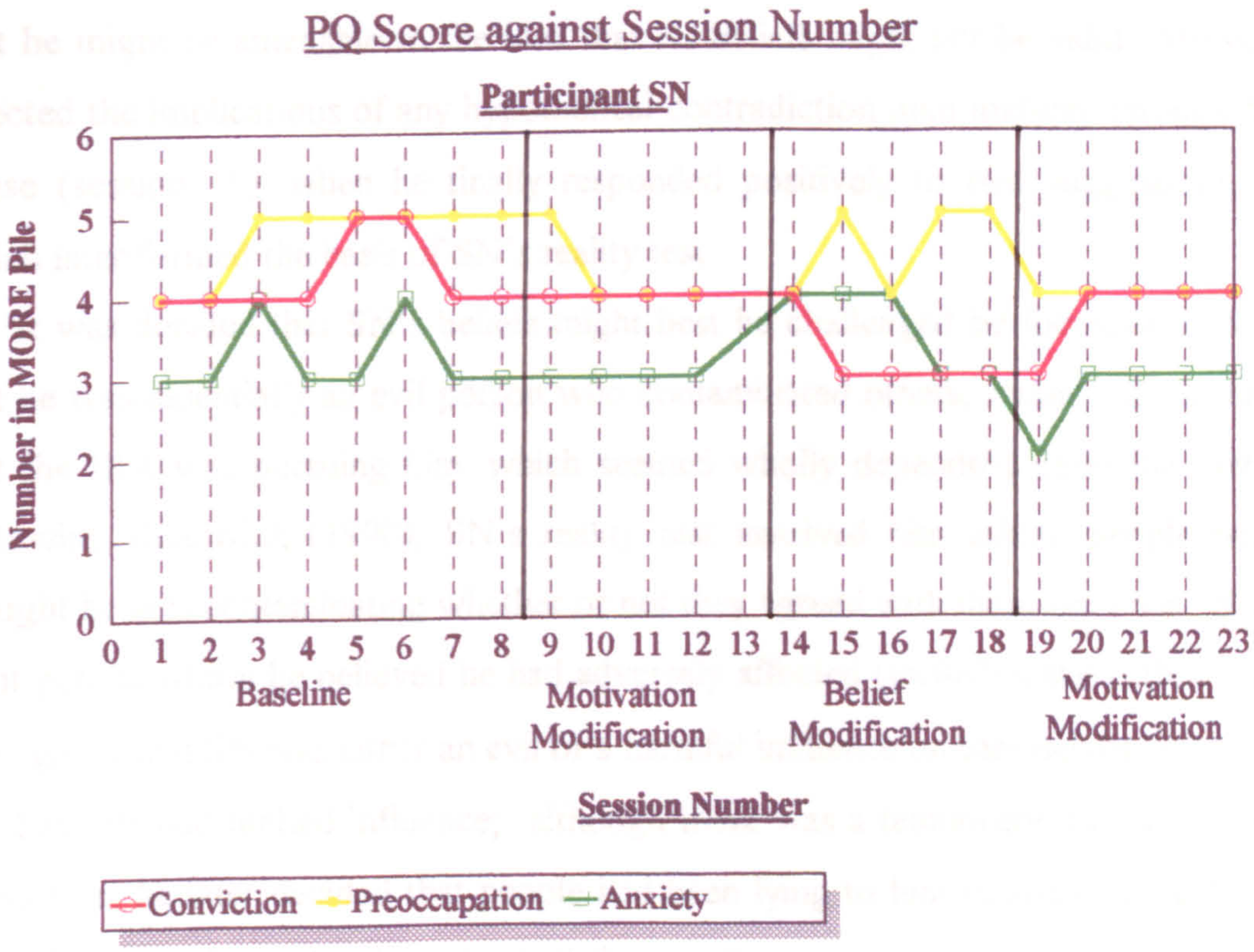
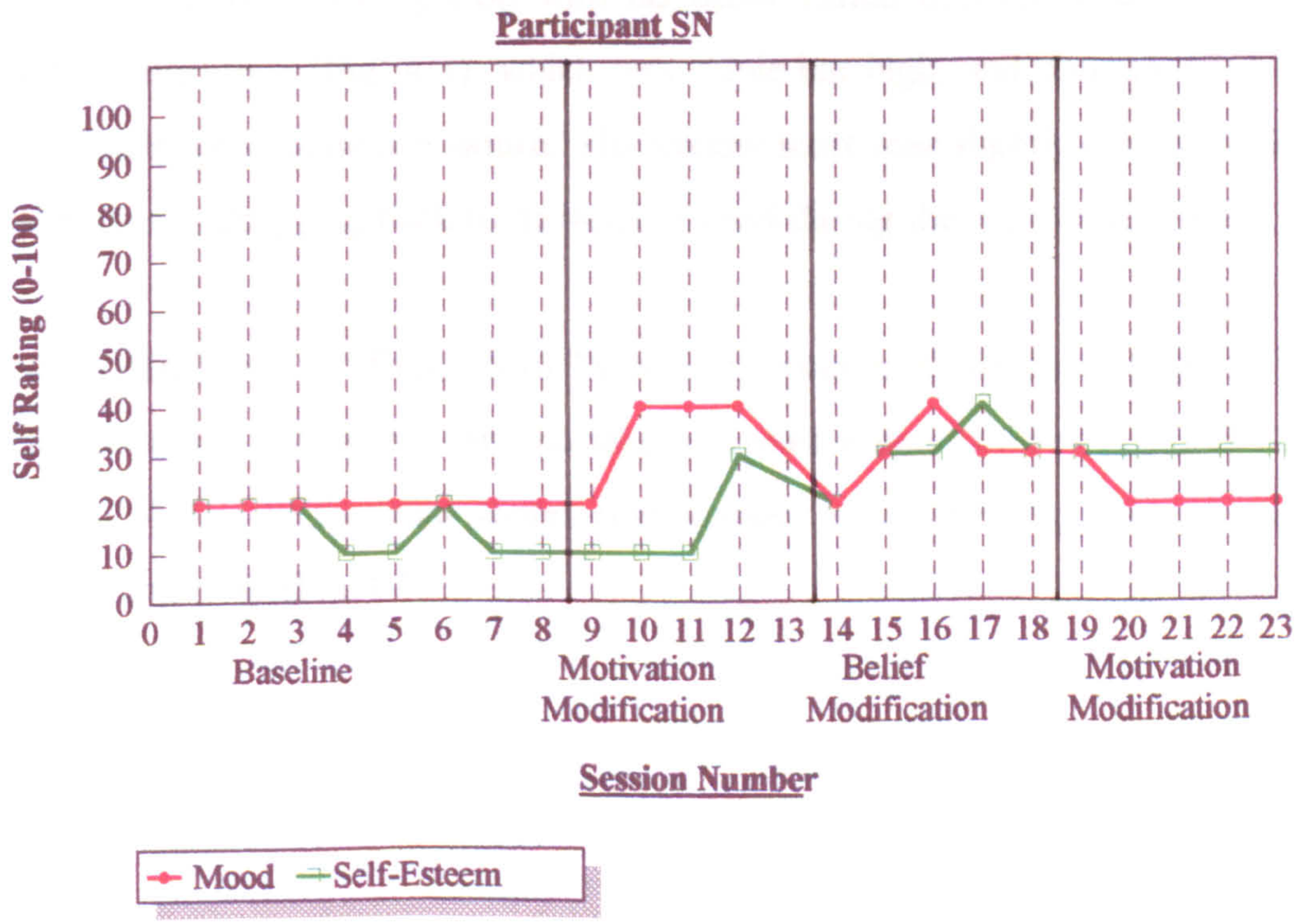


Figure 4-4



RTHC and reality test

SN's belief conviction never rose above the 60 per cent level (Fig. 4-1), suggesting that he might be amenable to the idea that his beliefs might not be valid. However, he rejected the implications of any hypothetical contradiction until midway through his MM phase (session 10), when he finally responded positively to two suggestions, one of which later formed the basis of SN's reality test.

It was decided that SN's beliefs might best be challenged by focusing on his belief that he was essentially an evil person who contaminated others, rather than on his belief that the IRA was pursuing him, which seemed wholly dependent upon the first belief. Following Chadwick (1990), SN's reality test involved him asking people whom he thought he was contaminating whether or not they agreed with these opinions. SN asked eight people whom he believed he had adversely affected (including the author), and not one agreed that SN was either an evil or a harmful influence on themselves or on others.

The test had limited influence; although there was a temporary drop in SN's belief conviction, he later decided that people had been lying to him to spare his feelings, and throughout the final MM phase, his belief conviction rose again to its previous level (Fig. 4-1)

Secondary measures

SN's level of preoccupation with his belief varied between a score of 4 and 5 throughout the study (Fig. 4-3), which was stable but high, and corresponded to SN's self-acknowledged ruminative nature. His anxiety score rose slightly during the first MM and BM phases, dropping back to its baseline level during the second MM phase (Fig. 4-2).

SN's BDI score fell from 26 to 21 over the course of treatment (Fig. 4-2), rising slightly during the MM phase, and corresponds with a simultaneous rise in SN's mood score (Fig. 4-4). Self-esteem scores rose steadily across phases, although the score never rose above 40 (Fig 4-4).

Condition 2

Participant CJ

Belief conviction

CJ maintained absolute conviction that his beliefs were true throughout the duration of the treatment (Fig 5-1). On only one occasion did his belief strength waver (falling to 90 per cent conviction), which occurred near the end of his first BM phase (session 12).

Accommodation

CJ's belief was never modified by an external event.

RTHC and reality test

Of the six participants, CJ responded least positively to RTHC. CJ countered every hypothetical suggestion by the author with innumerable clauses which would ultimately invalidate the scenario. For example, analysing his water supply using electron microscopy was limited by the honesty of the experimenter, the cleanliness of the equipment, whether the results were tampered with, and whether the government was using special 'shielding technology' to hide the psychotropic drug. CJ was acutely paranoid in his delusions concerning the seemingly omnipotent capabilities of the government, at one point stating "It's no use - you can't fight them, they're too strong. I've been trying for six years and I know that they can just do whatever they want".

Despite numerous attempts, the author was unable to devise a reality test which CJ would find even slightly suggestive of erroneous thinking. Hence, the main component of CJ's BM phase focused on verbal challenge, particularly upon the reasons why he chose to believe that his symptom of a "fuzzy head" was as a result of sinister government interference. In addition, the many inconsistencies of his account of events were highlighted. For example, CJ declared on two separate occasions that the antagonistic agency was the CIA, then later that he had been encouraged by the CIA to work against the KGB Whilst CJ was often at odds to account for these discrepancies, this was never reflected by a change in his belief strength.

Figure 5-1.

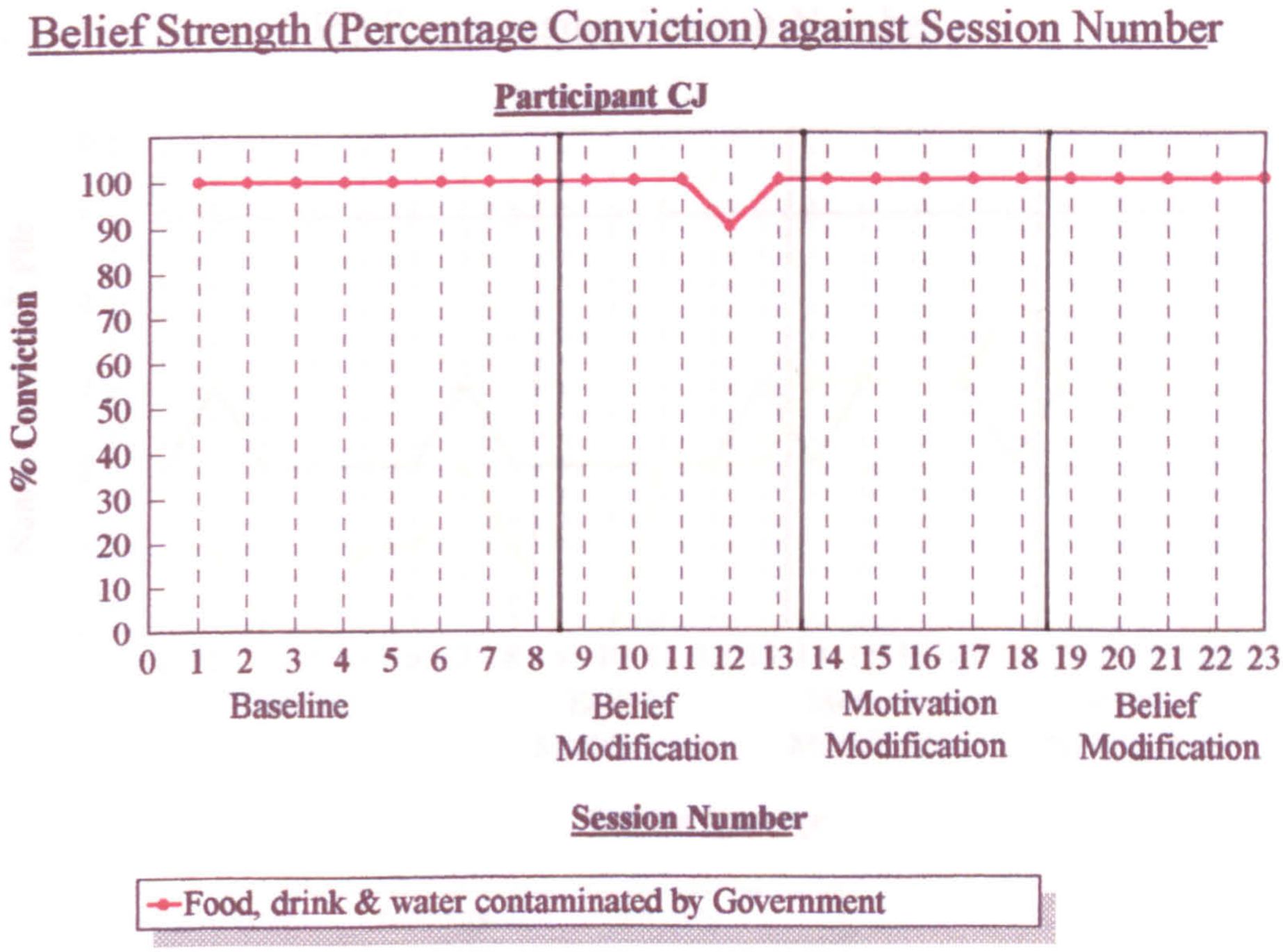


Figure 5-2

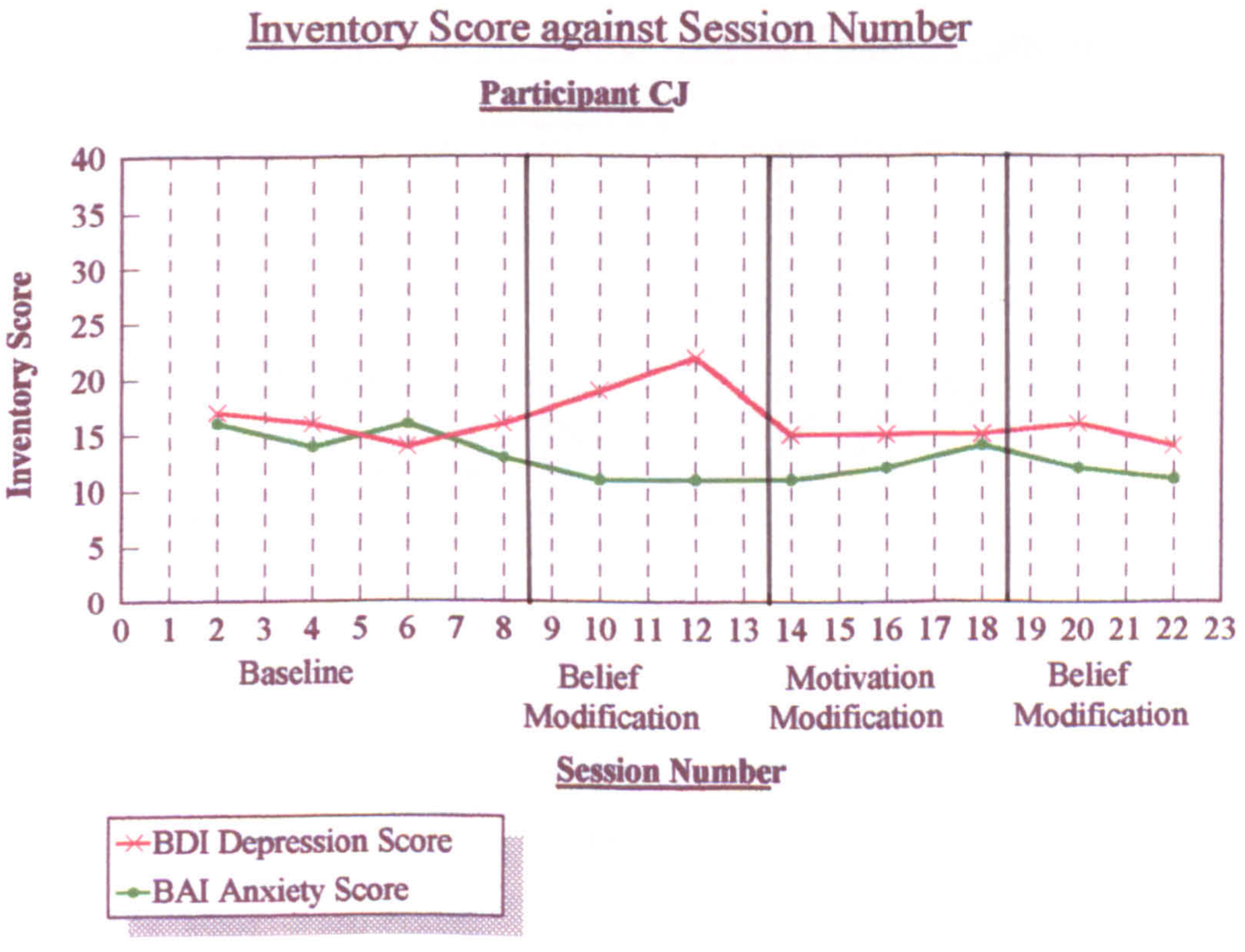


Figure 5-3

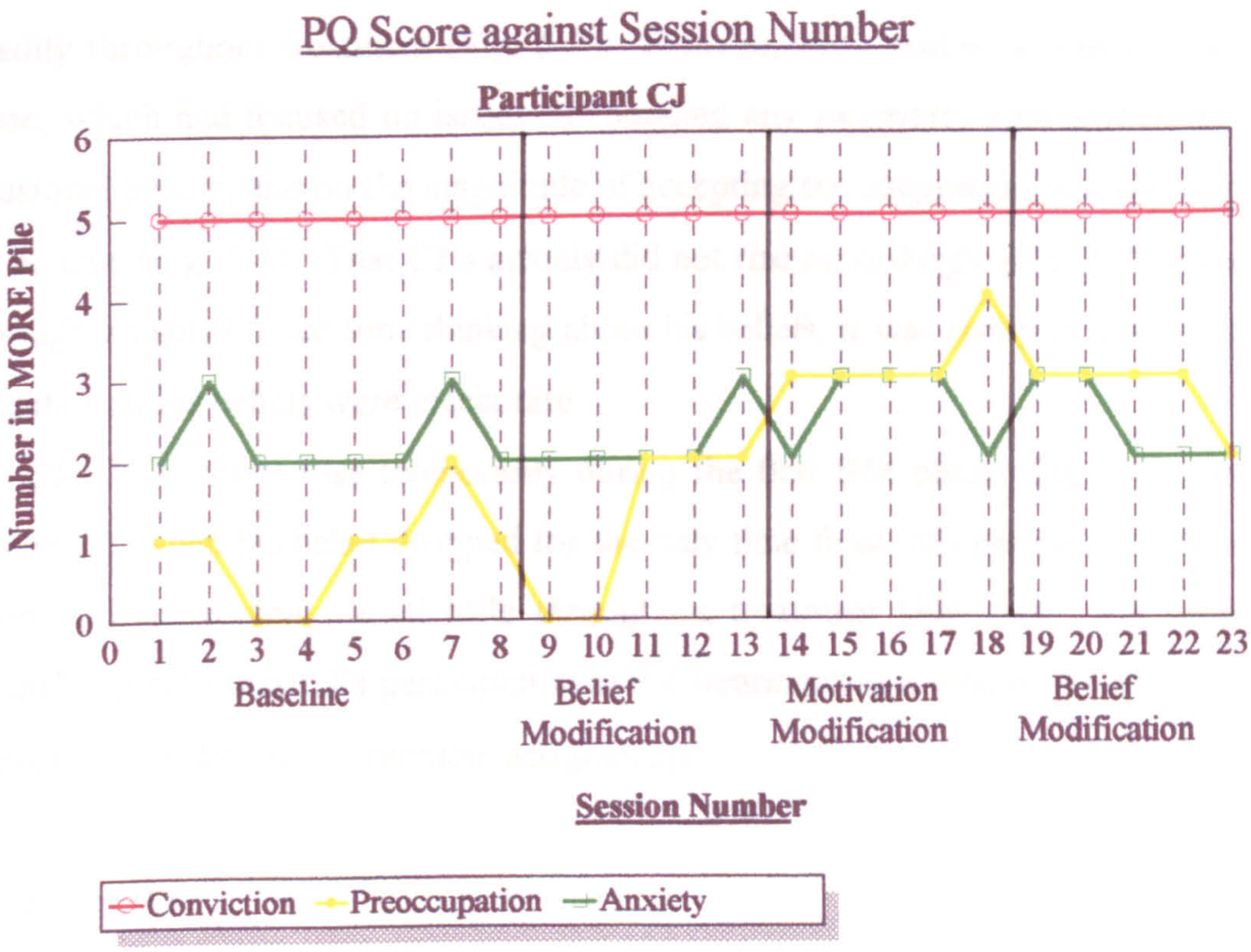
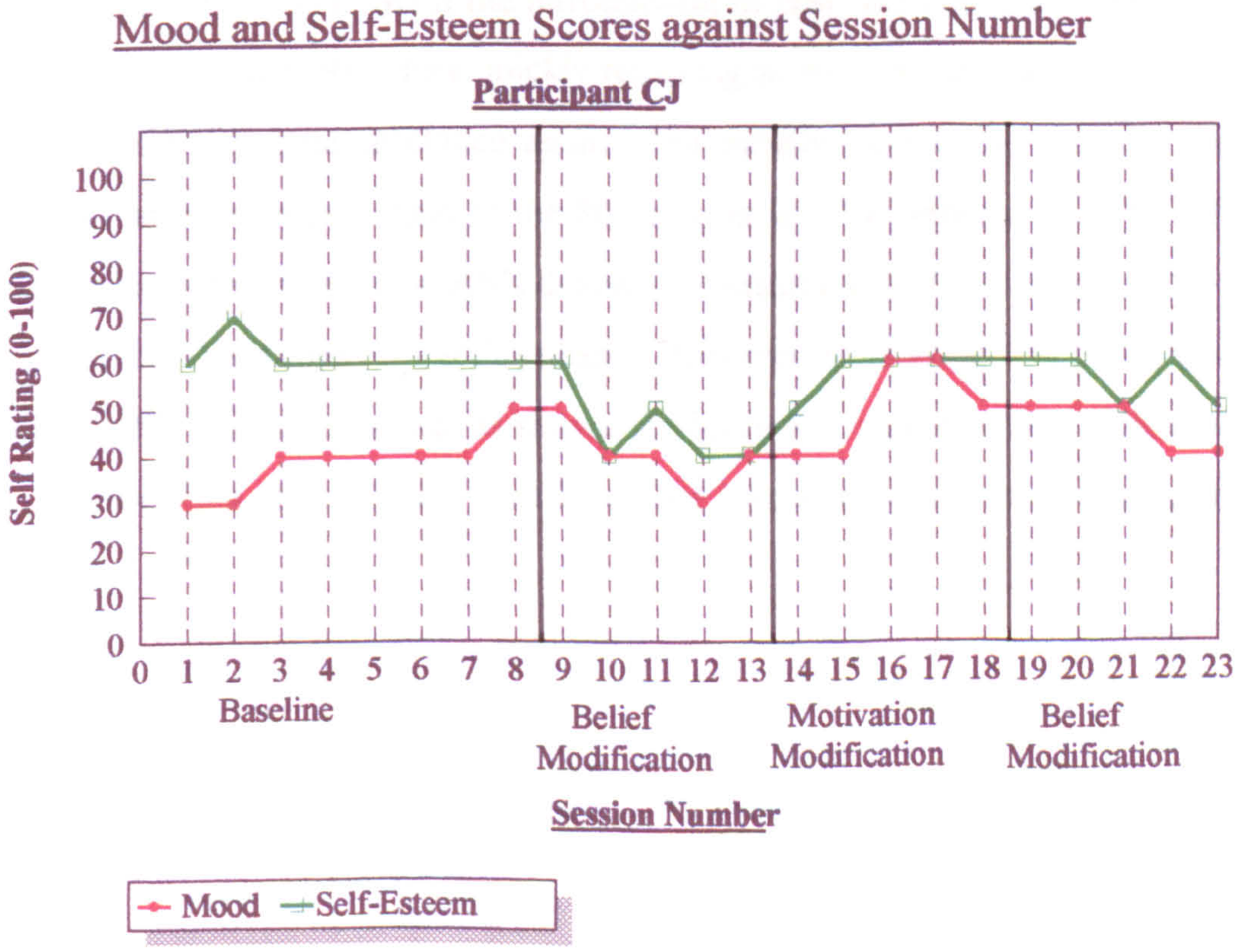


Figure 5-4



Secondary measures

Unlike his belief conviction, CJ's preoccupation with his beliefs did vary, rising steadily throughout treatment (Fig. 5-3). Preoccupation peaked at the end of the MM phase, which had focused on issues surrounding any secondary gain associated with his delusional beliefs, and on the magnitude of accepting the suggestion that his beliefs might not be true (Fig. 5-3). That CJ's anxiety did not rise accordingly (Fig. 5-2) suggests that although he spent much time thinking about his beliefs, it was rarely in a way that would indicate that his beliefs were inaccurate.

CJ's BDI score rose temporarily during the first BM phase (Fig. 5-2), peaking at session 12, when his belief dropped for the only time from 100 per cent conviction. His mood and self-esteem varied little throughout treatment (Fig. 5-4), and supports the author's opinion that CJ's participation in the treatment as a whole was casual, reflected by his frequent failure to complete assignments.

Participant RS

Belief conviction

RS remained 100 per cent convinced that her beliefs were true throughout the baseline phase (Fig. 6-1). With the introduction of BM, her conviction immediately fell by 25 per cent (session 9) before quickly returning to the 100 per cent level (session 10), perhaps signifying some reactance against the modification of her belief. Her belief conviction later decreased again to the 80 per cent level by session 12. The MM phase seemed to have no influence on RS's degree of conviction, with RS reporting 80 per cent conviction for all sessions during this phase. However, the second BM phase saw further decrease in the conviction score, as shown in Figure 6-1, and treatment ended with RS's level of conviction at the 60 per cent level, her lowest reported score during the entire treatment.

Accommodation

RS's belief strength was not altered by an external event at any time.

Figure 6-1

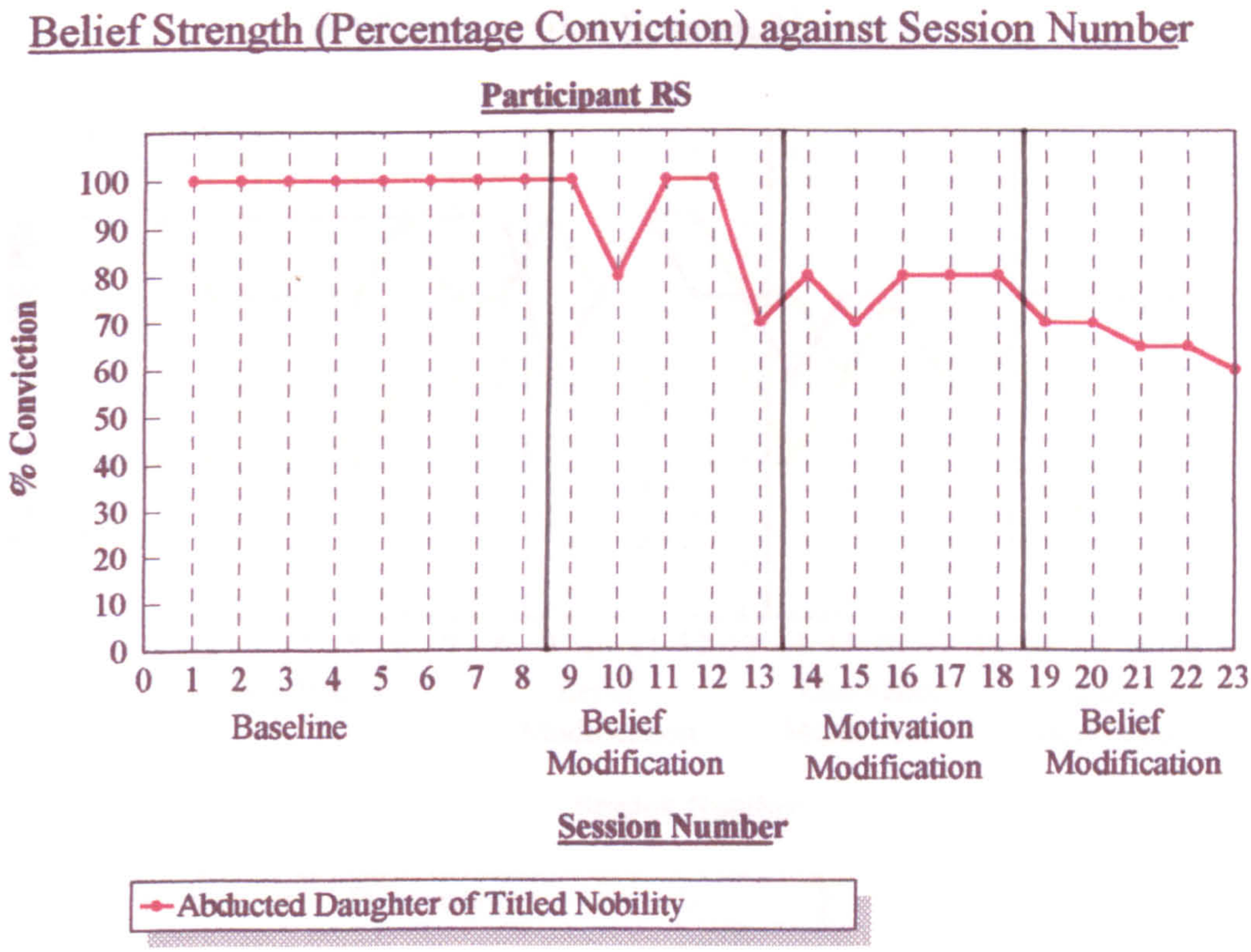


Figure 6-2

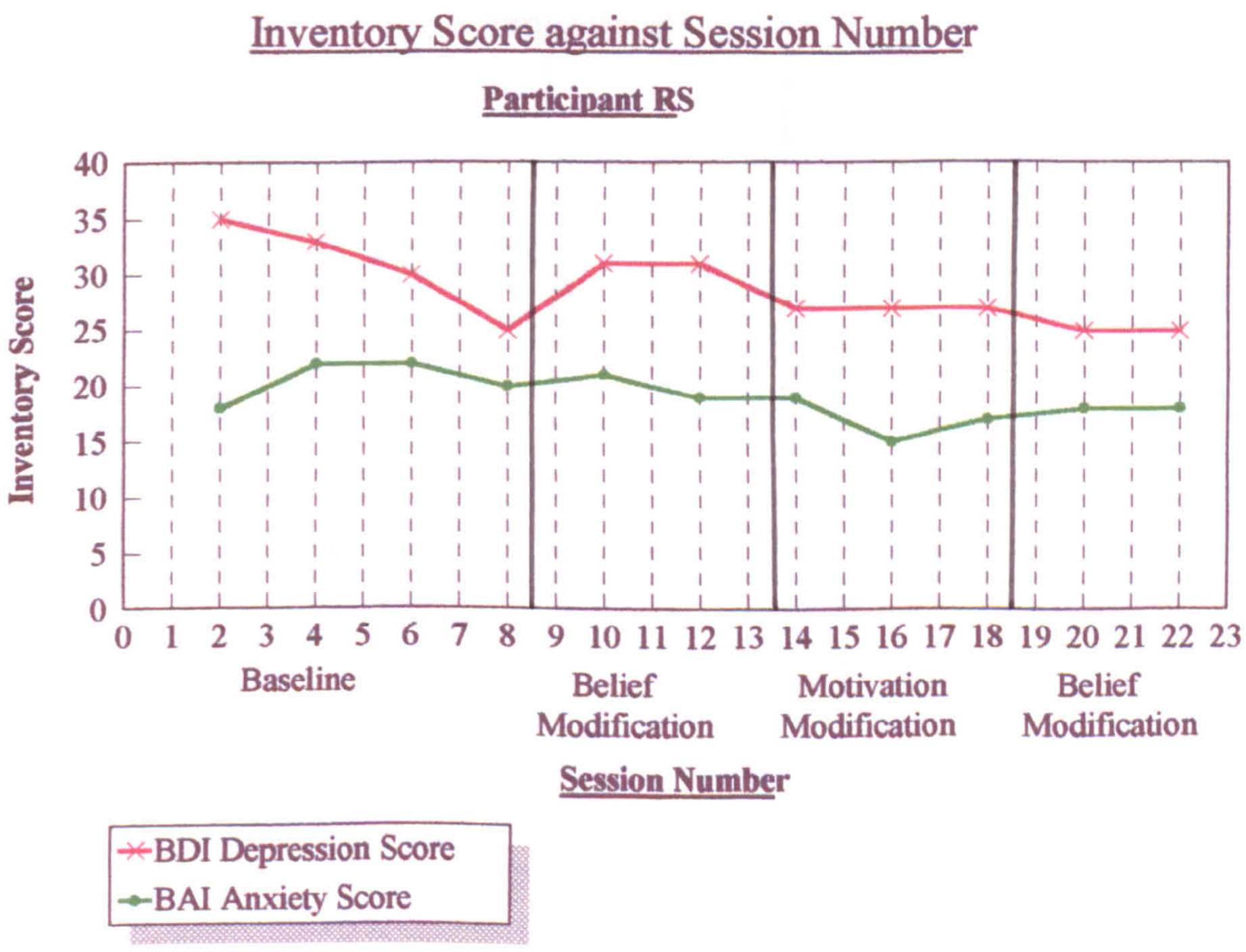


Figure 6-3

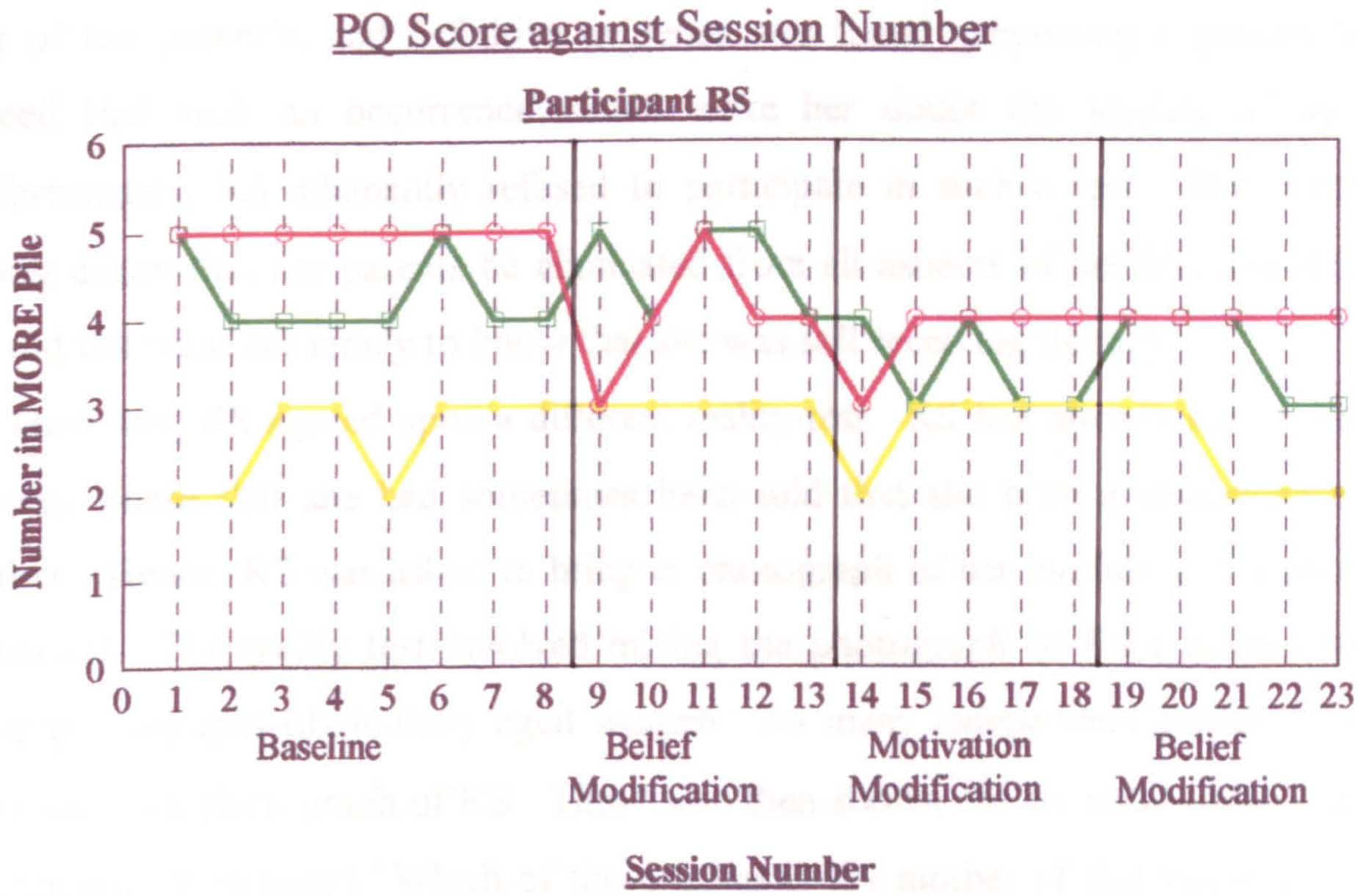
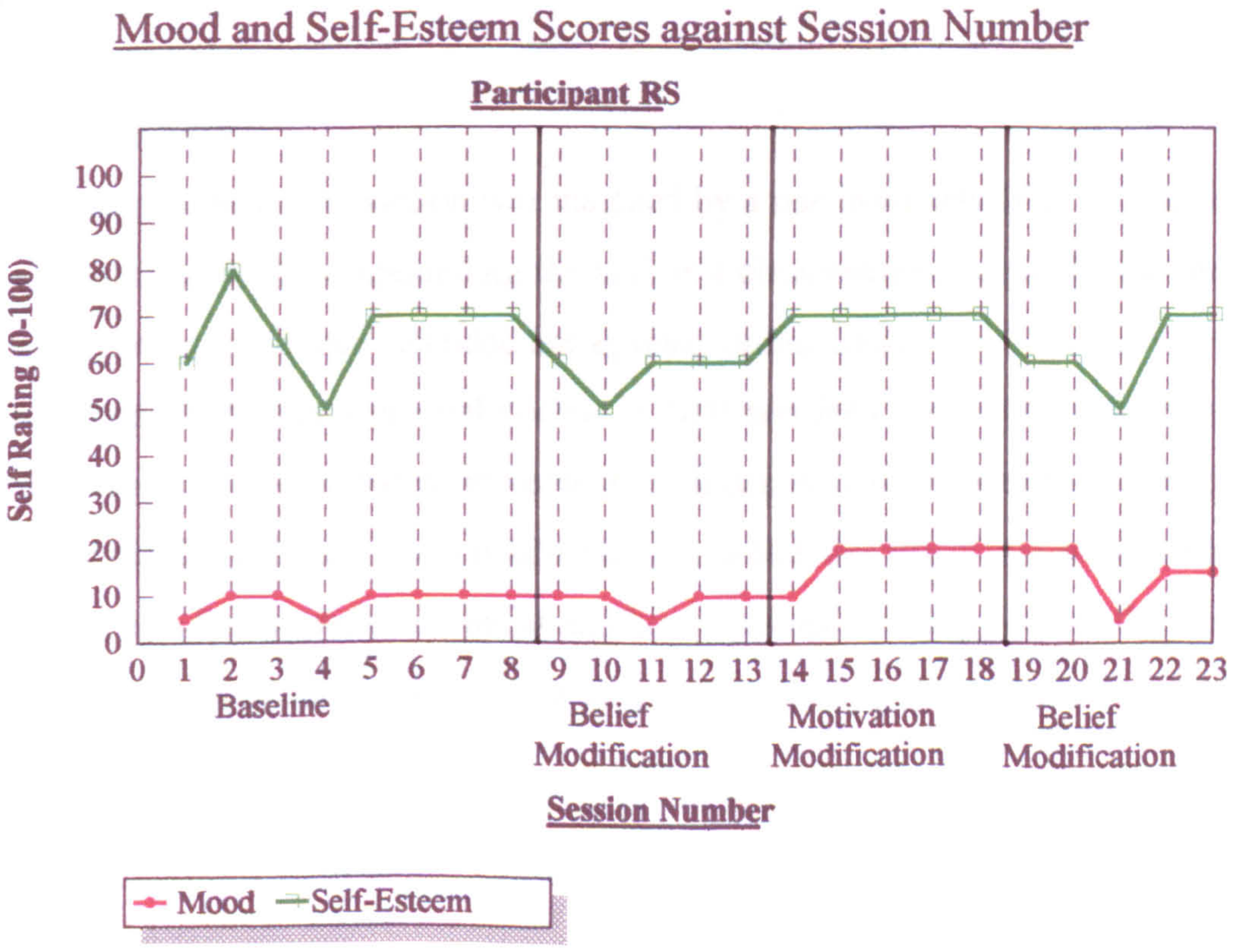


Figure 6-4



RTHC and reality test

Presented with the hypothetical scenario in which her blood was analysed alongside that of her parent's, and definitive evidence was found supporting a genetic link, RS agreed that such an occurrence would make her doubt the validity of her belief. Unfortunately, RS adamantly refused to participate in such a test. She expressed a strong desire that her parents be eliminated from all aspects of her life, and stated that she did not want her family to know that she was still receiving therapy.

However, RS agreed upon a different reality test. RS had already stated during the baseline phase that she had sometimes been told that she bore a resemblance to her mother. Hence, RS was asked to bring in photograph of her mother, and a photograph of herself. The reality test involved mixing the photograph of RS's mother with five other photographs of similarly aged women. As many independent people as possible were shown a photograph of RS. They were then shown the six photographs of elderly women and were asked "Which of these ladies is the mother of this woman?". Of the eleven people who participated in the test, seven correctly identified RS's mother, which RS agreed was unlikely to occur by chance. However, in later sessions RS rejected the implications of the test, stating that the test had been fixed and that the results "proved nothing".

Secondary measures

RS's drop in belief conviction was matched by a rise in anxiety (Fig. 6-2) and a fall in self-esteem (Fig. 6-4), compounding the author's observations during the baseline phase that her belief in some way defended her against 'ordinariness'.

Although there was a gradual decline in BDI and BAI scores throughout treatment (Fig 6-2), there was an apparent increase in both depression and anxiety during both BM phases, particularly during the first BM phase in which her belief was weakened, further strengthening a link between her belief and her emotional stability. RS's other secondary measure scores were unremarkable (Fig 6-3).

Participant PL

Belief conviction

PL's belief conviction was stable at the 100 per cent conviction level throughout the baseline phase (Fig 7-1). The belief strength dropped slightly during the BM phase, whereupon PL decided to leave the study.

Accommodation

PL never reported experiencing an event that caused him to doubt the validity of his belief.

RTHC and reality test

PL responded positively to hypothetical contradiction. For example, he agreed that his belief strength would be reduced when presented with the scenario in which the year 2000 had passed, and he had not woken from his dream. Baseline interviews with PL suggested that he may have responded positively to participation in a reality test. Unfortunately, he decided to leave the study before a definitive reality test for his belief could be developed. It is suggested that the advantages for PL in keeping the belief may have outweighed the advantages of him relinquishing the belief.

Secondary measures

PL started and ended treatment with a BDI of 14, and there was little variation of this score for the duration of his treatment (Fig 7-2). Interestingly, Figure 7-2 shows that his anxiety score rose sharply shortly before he failed to attend two sessions (sessions 7 and 9). This was also shortly before his belief conviction was reduced (Fig. 7-1), and just before he left the study. These results might indicate that PL left the study not as a result of the apathy characteristic of his sessions and an unshakeable conviction that his belief was right, but because the magnitude of accepting that his beliefs were untrue was too great, and wholly devoid of any conceivable gain.

Figure 7-1

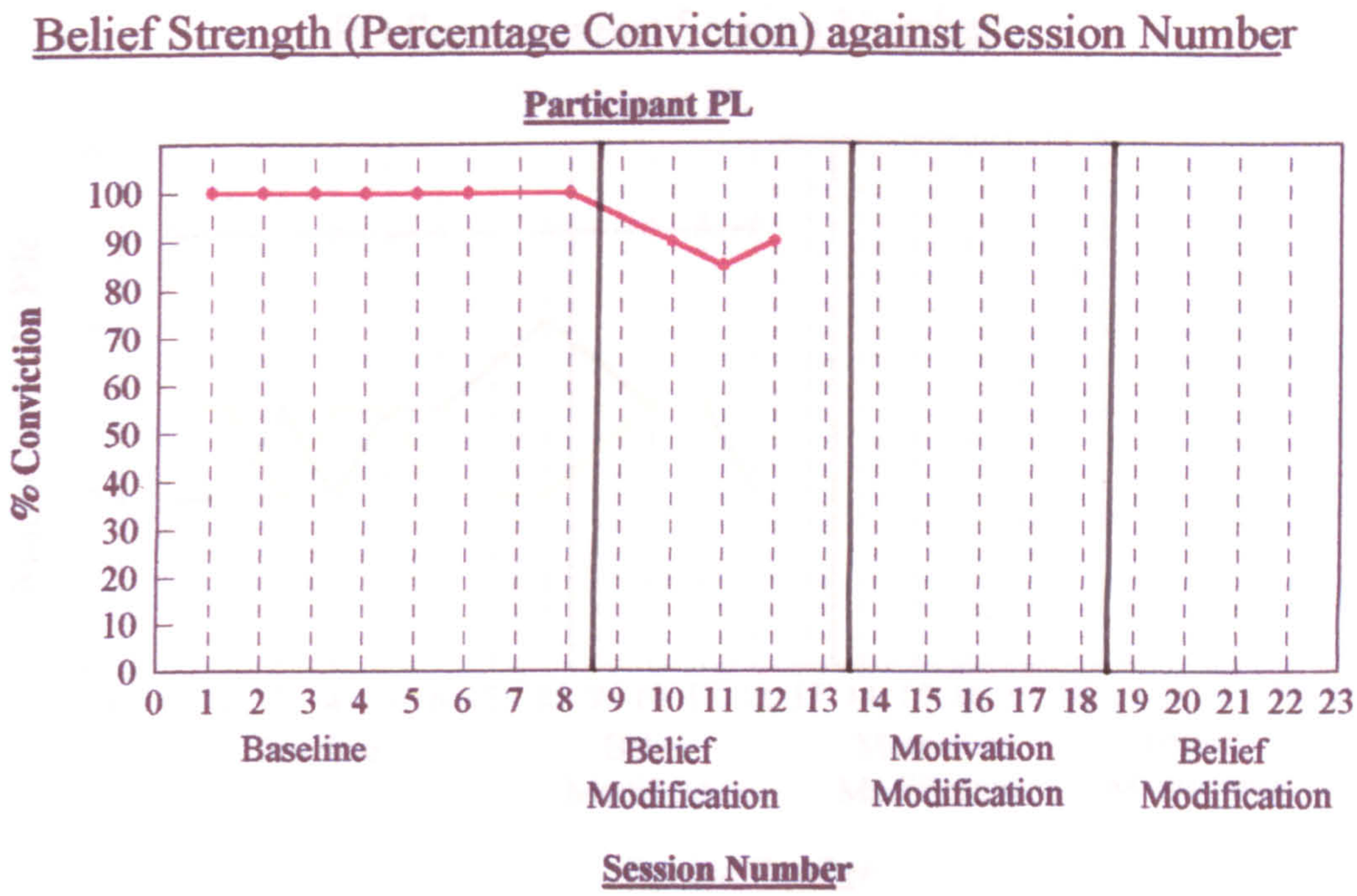


Figure 7-2

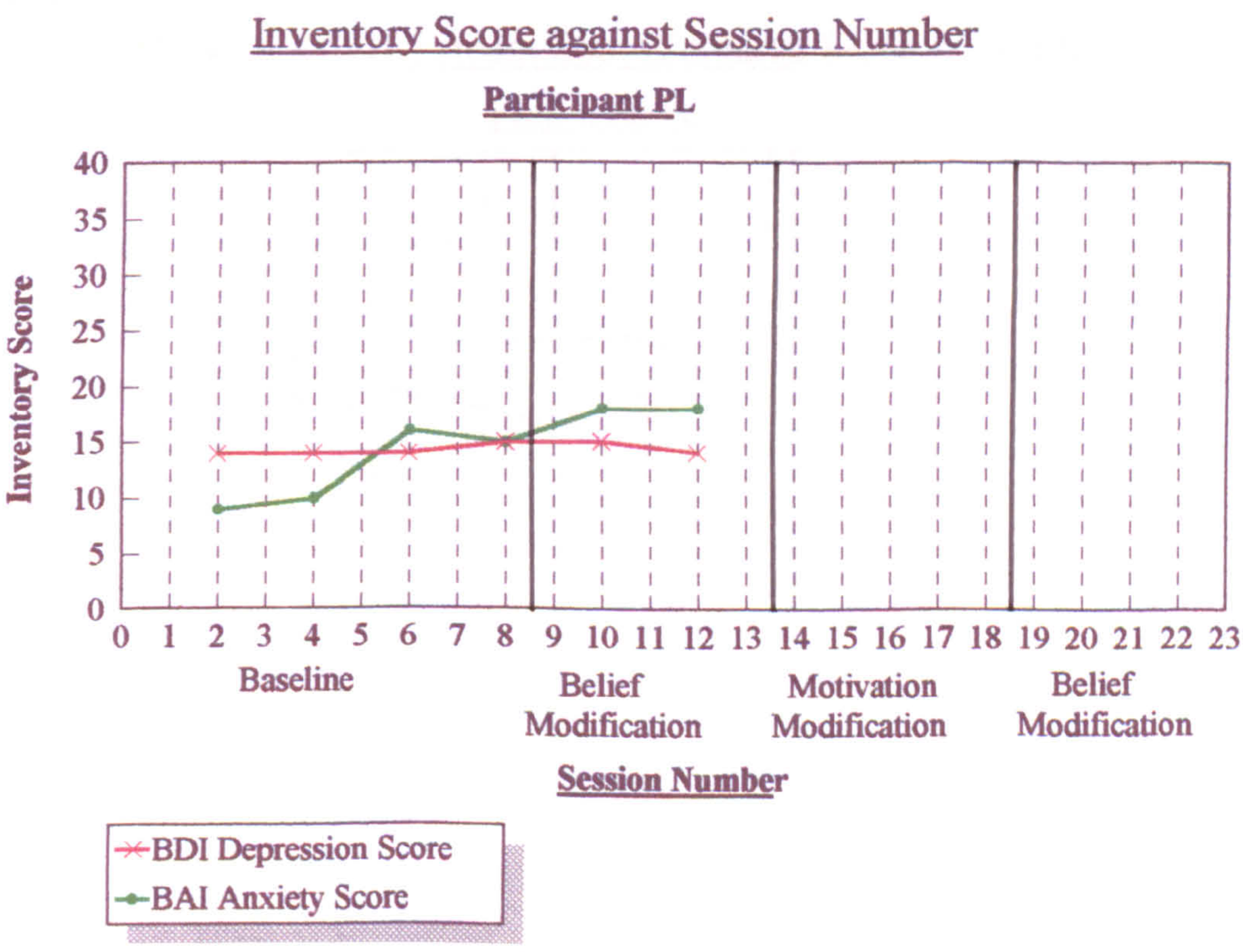


Figure 7-3

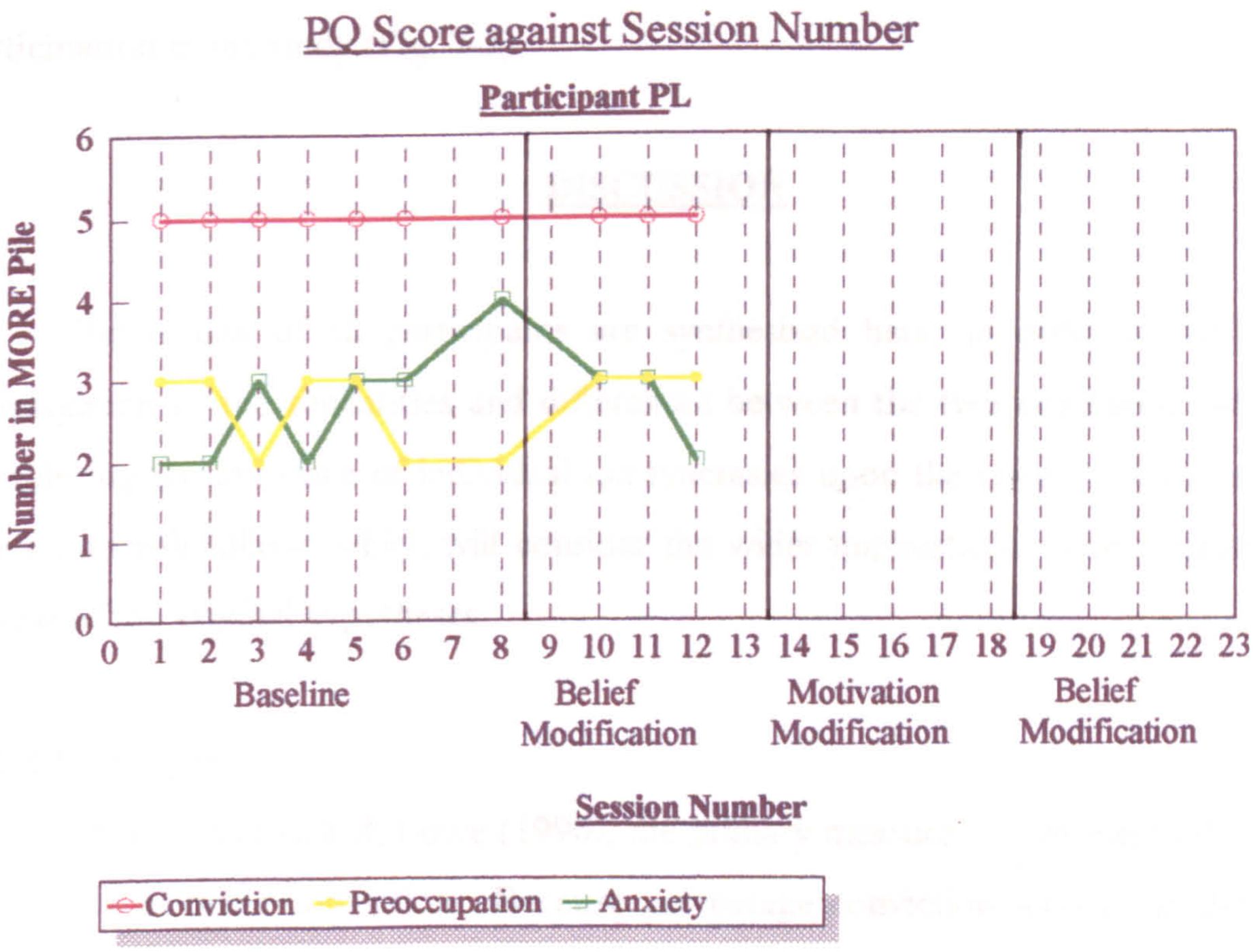
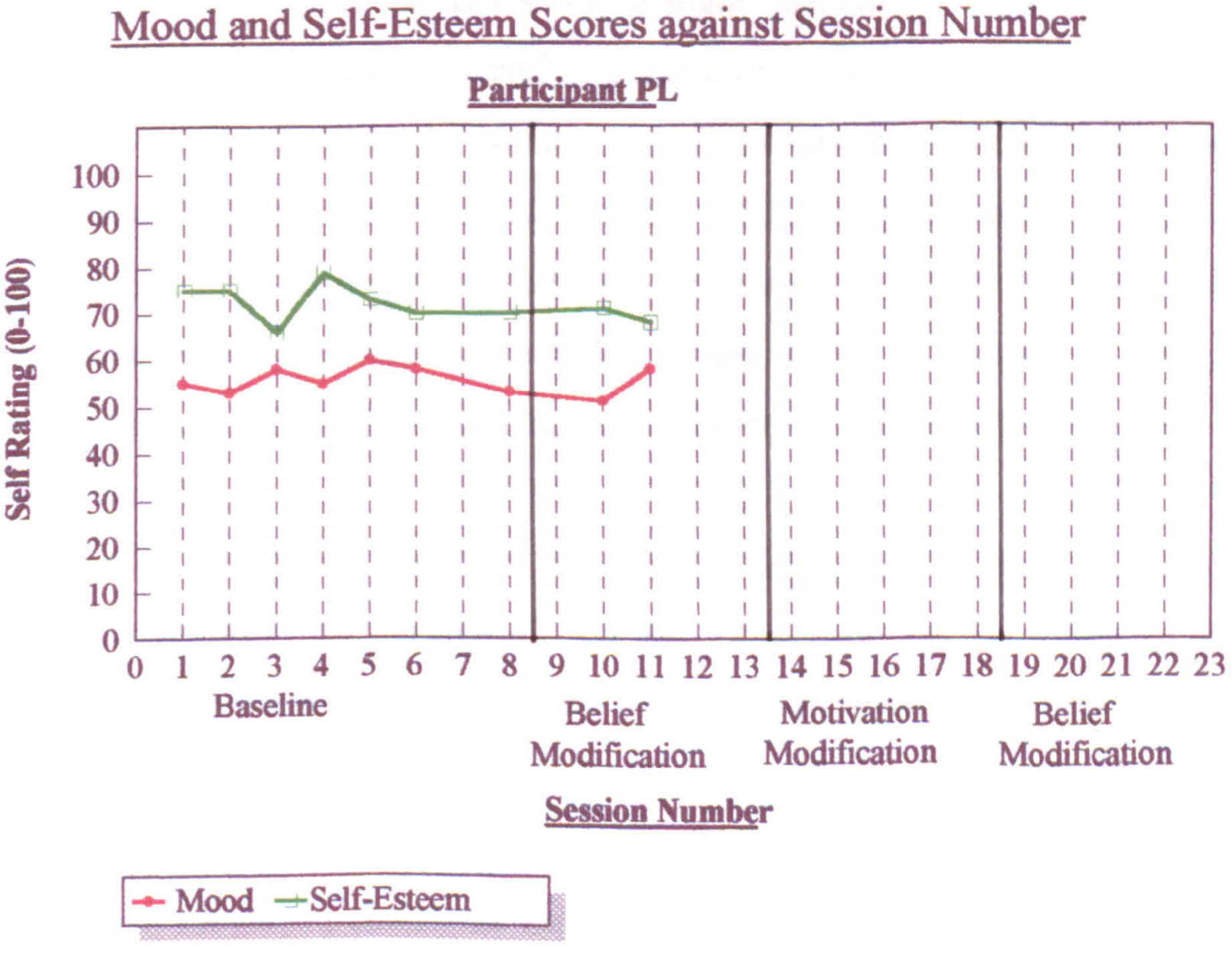


Figure 7-4



There was no other meaningful variation in PL's scores for preoccupation, mood or self-esteem, which maintained stable (if somewhat high) levels throughout his participation in the study (Fig. 7-3).

DISCUSSION

The results of all participants are synthesised here, in order to facilitate an investigation of the similarities and differences between the two conditions, whilst still considering the influence of individual idiosyncrasies upon the results. A more general discussion will follow, which will consider the wider implications of the results, and a review of the original hypotheses.

Belief Conviction

Following Chadwick & Lowe (1990), the primary measure of treatment efficacy was the degree of belief conviction. Because percentage conviction scores correlated very closely (a Pearson's *r* of between 0.58 and 1.00 for all subjects, with a mean *r* of 0.89), the PQ conviction measure is not discussed separately.

During the baseline phase, percentage conviction was extremely stable for all participants, with only SN and BN showing slight fluctuation. However, there appears to have been more variation in belief strength throughout treatment for participants in condition 1 than in condition 2. Notably, belief strength in condition 1 appeared to fall more consistently than in condition 2, where a fall in belief strength was followed by a subsequent rise in all participants. Although reactance is reported to be minimised when verbal challenge is conducted before reality testing in BM (Chadwick & Lowe, 1990), these results may indicate that reactance was still more manifest when BM had not been preceded by MM.

The *first* MM phase appeared to have little effect upon belief conviction for all clients. The beliefs of participants AF, CJ, SN, PL and RS did not change at all during the first MM phase, and in some cases were more stable in this phase than in the baseline phase. This suggests that the objective of MM was upheld, in that beliefs were not challenged directly during this phase; rather, the client was conditioned for later belief modification. However, there was some variation in belief conviction during BN and

SN's second MM phase. These phases followed the first BM phase in which the beliefs had been challenged with some success in both cases (a drop of 60 per cent and 20 per cent respectively, by the end of BM). It appears that once the somewhat rigorous procedure of BM had been conducted with these clients, the subsequent MM phase did not consolidate the gains made during BM, and allowed the clients to reinforce their beliefs. However, it is suggested that these figures during MM may be less affected by demand characteristics than the figures in the BM phase, and may therefore be a more accurate account of belief strength. The issue of demand characteristics is discussed in more detail later.

It seems clear from the graphs that the most rapid response to BM occurred in condition 1. Participants AF and BN maintained a high, stable belief strength throughout the baseline and MM phases. With the implementation of the BM phase, both clients experienced a rapid drop in their belief conviction. The focus of MM for these participants involved encouraging co-operation on a 'quest for the truth', limiting the dysfunctional assumptions associated with changing the beliefs, and increasing their number of pleasurable activities. BN found supported employment working as a part-time cleaner and in a local charity shop, whilst AF was actively engaged in seeking similar employment with his social worker at the end of treatment. As BN stated during the final MM phase, "I think a lot of it boiled down to having had nothing to do - my mind gets overactive and starts seeing things". It would appear that by weakening the role-defining function of their beliefs, participants AF and BN were able to respond more positively to subsequent verbal challenge.

In contrast, participants PL and RS responded more slowly to BM, with little change in RS's belief strength until towards the end of the BM phase. However, RS's response to the second BM phase was more successful in reducing her belief conviction than the first BM phase, suggesting that MM may still offer some benefit to treatment even when introduced after BM has taken place. This is discussed in more detail later.

<u>Reaction to Hypothetical Contradiction</u>

When faced with hypothetical contradiction, five of the six clients responded on at least one occasion that if such an occurrence did take place, it would weaken their belief strength. The only participant to reject all hypothetical contradictions (CJ) was also the

participant whose belief was most resistant to change, supporting the findings of Chadwick & Lowe (1990) who claim that participants who responded poorly to hypothetical contradiction were least likely to respond to an intervention designed to alter beliefs.

Interestingly, participant AF did not yield easily to suggestions that his beliefs may be incorrect, which was reflected in his reluctance to entertain *any* hypothetical contradiction throughout the entire baseline period and during most of his MM in phase 2. However, at the end of his MM phase, AF *did* finally accept that if one of the therapist's proposed hypothetical contradictory events occurred then his belief strength would be weakened. This was in contrast to participant CJ, who steadfastly refused to acknowledge the possibility of a disconfirming experience throughout the course of treatment. During later sessions, AF agreed to reality-tests of his beliefs, which were subsequently reduced when one test did not uphold one his beliefs. In AF's case, it is assumed that much of the function of the verbal challenge in the BM package was fulfilled by the MM phase, which focused on encouraging him to collaborate with the author on a 'quest for the truth', which he finally agreed to try.

<u>Reality testing</u>

The investigator was able to negotiate reality tests with participants AF, SN and RS. The readiness with which participants were able to develop a suitable reality-test seems to have been influenced by whether or not MM preceded the formulation of the test. As described above, AF agreed to a definitive reality test very suddenly towards the end of his MM phase (session 12). Similarly, SN decided to engage in a reality test after having shown initial resistance.

The author was unable to devise a reality test with BN, although this is not to say that no such test existed. Nevertheless, BN's belief conviction fell during BM despite the absence of a reality test. This supports the findings of Chadwick & Lowe (1994) who maintain that verbal challenge *alone* can sometimes be used to successfully modify delusional beliefs. In addition, it may also indicate that any enhancement MM might make to a subsequent BM intervention is not dependent upon the inclusion of a reality test (as might be supposed from the results of AF and BN), but that the verbal challenge component of the BM package may also be enhanced.

In the case of RS, an acceptable reality test was agreed upon, but when the results of the test indicated that her belief might be wrong, RS reneged on her statement that it was definitive. Nevertheless, she did seem to accept some of the implications of the reality-test, as evidenced by the decline in her belief conviction following session 11. From a stable baseline figure of 100 per cent conviction in her belief, RS's degree of conviction following the reality test never rose above 80 per cent throughout the rest of the study. This lends support to the potential benefits of a *suggestive* rather than *definitive* reality test, and it is suggested that reality-testing may still be a worthwhile pursuit even amongst those clients who are unable to agree upon a definitive test.

Depression

Chadwick & Lowe (1990) show a positive relationship between belief conviction and fall in BDI score. The results from this study offer tentative support for this relationship, but also indicate that a fall in belief conviction was often matched by a simultaneous short-term *rise* in BDI scores (participants AF, CJ and RS). This rise in BDI score was temporary, and by the end of treatment fall in belief conviction was matched by a fall in BDI levels (Table 3).

Chadwick & Lowe's (1990) findings focus primarily upon beliefs which their clients found dysfunctional or upsetting. In the case of AF, the beliefs were perceived by the client as neither dysfunctional nor upsetting. Hence, when AF's belief conviction fell, it was matched by a slight *rise* in BDI from 5 to 9 points (though still within the normal range). In a similar vein, the rise in BDI scores for CJ and RS during a fall in belief conviction suggest that in some way, their beliefs served a functional, protective role. By weakening their beliefs, their role in the world *as defined by the belief* may have become unclear, and the clients exposed to the magnitude of the notion that their belief might not be true, with all that implies (e.g., "If my beliefs are wrong, I must be mad" (RS)).

By contrast, the link between BDI and belief conviction in condition 1 is more conventional. BN's BDI scores dropped in accord with a fall in belief strength, as did SN's, although to a lesser extent. It appears that one of the functions of MM is to guard against a depressive reaction to weakened beliefs by exploring the advantages to the client surrendering their belief. Accordingly, RS's fall in belief conviction after session

18 was not matched by a rise in BDI score, perhaps because some of these issues had been resolved by her previous MM sessions.

Secondary measures of change

Analysis of further measures will be facilitated by grouping together results from all tests. Table 3 summarises the difference between *all* scores from the first session to the final session. These figures should not be regarded as outcome measures, however, as the measures used here have not been developed or standardised to be valid outcome measures. In addition, Table 3 also fails to account for variation in scores between phases. However, the start and end results shown in Table 3 are broadly representative of all the scores at the start and end of treatment for all clients (Appendix 3).

Table 3. The difference between scores at the start and end of treatment for all participants.

Condition	Subject	Change in BDI score	Change in BAI score	Change in mood	Change in self esteem	Change in belief conviction	Belief ever responsive to RTHC?
1	AF	+3	0	-30	-15	-100%	Yes
1	BN	-4	-2	+40	+45	-70%	Yes
1	SN	-13	-4	0	+10	0	Yes
2	CJ	-3	-5	+10	-10	0	No
2	RS	-10	0	+10	+10	-35%	Yes
2	PL*	0	+9	+3	-7	-10%	Yes

* N.B.: The results for PL record the difference between his scores at the baseline session and the scores taken at his final session.

Table 3 shows that belief conviction was reduced in four of the six participants. In addition, it appears that clients in condition 1 ended treatment with a lower conviction in

their delusional beliefs than clients in condition 2. No change is evident in the belief strengths of either SN or CJ, although SN's belief conviction was more variable than CJ's, dropping by 20 per cent for two consecutive sessions.

Table 3 also demonstrates that BDI scores closely match self-reported mood scores. A *fall* in overall BDI score is matched by an equivalent *rise* in mood score for four of the six participants, which goes some way to enhancing the validity of these self-report measures, and suggests that the results are not wholly a product of demand characteristics.

With the exception of AF, no participant finished treatment with a BDI score greater than their starting score. Additionally, with the exception of PL, no client ended treatment with a BAI score greater than their initial score. These results indicate that even in those cases where BDI and BAI scores do not fall as a result of BM and MM treatment, at least there is no increase in these scores. Although AF's BDI score rose by three points by the end of treatment, his score was still within the normal range. Similarly, PL's rise in anxiety is thought to be one of the reasons that caused him to leave treatment. This may suggest that the BM phase was the most anxiety provoking part of the combined package.

Preoccupation was higher in phases of BM than MM for all participants in condition 1, perhaps suggesting that dysfunctional preoccupation with a delusional belief is lessened when an attempt to modify the belief is preceded by an attempt to increase the client's motivation to change. Interestingly, preoccupation levels were unchanged from the start of treatment in participants AF and BN, despite a considerable decrease in their belief strengths. However, it is argued that the focus of the preoccupation towards the end of treatment for both clients was more *reflective* than dysfunctional, typical verbalisations being, "I can't get over how long I believed it" (BN).

<u>Self-esteem</u>

Participants in condition 1 seem to have ended treatment with a greater increase in levels of self-esteem than participants in condition 2. It is suggested that this is a result of the extra focus given in condition 1 to issues of how reduction in belief strength might affect self-esteem during the MM phases.

It should be noted, however, that clients in condition 1 ended treatment immediately after their second MM phase, much of which was designed to address anxiety, depression, and self-esteem. It is possible that the figures in Table 3 might unduly reflect this differing focus of the intervention.

Chadwick & Trower (1996) argue that certain types of delusions defend against negative self-evaluation. One would therefore expect that by weakening the belief strength of some individuals, levels of self-esteem would decrease. This was reported by two clients in condition 2 (CJ and PL), and by one client in condition 1 (AF). These results may indicate that MM is more successful than BM at limiting damage to self-esteem as a result of a fall in belief conviction. In support of this, a substantial rise was evident in the levels of self-esteem for participant BN as a result of MM therapy, whilst levels of self-esteem fall during BM therapy for participants CJ and RS. In contrast, however, SN's level of self-esteem was shown to rise during the BM phase, again demonstrating the difficulty of making generalised predictions in what is a very idiosyncratic phenomena.

Notwithstanding, the end of treatment review suggested that those clients whose belief strength had reduced considerably (AF and BN) had found the therapeutic process more empowering than those whose belief strength did not drop to the same extent. Perhaps these clients came to see their beliefs as responsive to their motivation to change, and highlighted the fact that they had control over their beliefs, rather than their beliefs having control over them. Furthermore, consistent with Chadwick & Lowe (1994), all clients appeared to benefit to some degree from seeing their belief as having arisen as an understandable reaction to their life experiences.

General discussion

At the end of treatment, self-reported belief strength was lower in four out of the six participants across both conditions, and the trends seem to cohere well with the literature which postulates that cognitive-behaviour therapy is an effective treatment for delusional beliefs (Chadwick & Lowe, 1990; Slade & Bentall, 1988). This discussion will start by examining whether or not the original hypotheses were supported by the results of the study.

Hypothesis 1: That "belief modification" is a more effective intervention for weakening the strength of delusional beliefs when preceded by "motivation modification".

The results offer tentative support for the first hypothesis of the study. When efficacy is measured by a fall in belief conviction, belief modification can sometimes be a more effective intervention for changing delusional beliefs when preceded by motivation modification. This is in contrast to Chadwick & Lowe (1990), who assert that their findings *"do not support the view that delusions are the result of motivational factors"*. (p.230). The results from the current study seem to indicate that motivational issues are more important than the Chadwick & Lowe studies (1994) may have assumed. In particular, it is argued that motivational factors have an important role in the *maintenance* of delusional beliefs, if not in the formation of delusions.

Therapy during the MM phase focused on the advantages and disadvantages for each client in changing their belief system, and attempted to make this change easier for the client. The results suggest that by implementing such an approach, it was possible to influence the client's motivation to change. This motivation to change seems to have made subsequent acceptance of the belief modification package easier for some clients, reflected by a marked fall in their belief conviction following an MM phase, and a greater willingness to collaborate with the author on reality tests.

In particular, by preceding BM with MM, reduction in belief conviction seems to occur more rapidly than when BM is introduced as the first active component of a combined package. Both AF and BN reported a considerable drop in their belief conviction immediately after the first session of verbal challenge (session 9). In contrast, the first drop in the belief conviction of CJ and RS did not occur until midway through their BM phase, and these falls were not maintained into their next sessions. It appears that by increasing the client's motivation to change, the client quickly embraces the BM package. The MM package appears to enable the client to reach the stage where he/ she is motivated to question the validity of his/ her belief and to subject their belief to a reality test. When the opportunity to do this becomes available (BM), the client accepts the BM package more readily than those clients whose BM phase was not preceded by attempts to increase their motivation to change.

The strength of MM lies in its perceived ability to enhance the effect of subsequent BM therapy. The results indicate that MM *alone* did not seem to have any significant

influence on belief conviction. However, MM alone was far from therapeutically inert, and was seen to influence a number of secondary features in the absence of any change to belief conviction. For example, therapy conducted during an MM phase in which belief conviction remained stable also resulted in self-reported mood rise (AF, CJ and SN), BDI rise (BN), preoccupation drop (BN) and anxiety rise (SN). These differing responses to MM emphasise the idiosyncratic nature of delusional beliefs, and support the choice of single case methodology. This is discussed in more detail later.

The study raises a number of interesting issues regarding the use of MM in conjunction with BM. The results suggest that MM may have only a limited effect when it is introduced into a treatment package in which BM has already taken place. The effect of introducing MM *after* BM had a less favourable influence on measures than when MM was used as the first approach to modifying clients' delusions. For example, whilst belief conviction *was* responsive to BM after an MM phase for participant RS, the drop in belief conviction was not as great as the drop in her conviction during her previous BM phase. This suggests that at least some of the power of MM lies in it being employed before any other type of treatment. Perhaps early in therapy, clients are more likely to perceive the entire therapeutic process as more confrontational when BM is used at the start, even when verbal challenge is used before a reality-test. This may lead to subtle reactance in the client, which appears to be lacking when MM is used as the first type of treatment.

Furthermore, there is evidence that MM can fail to capitalise on gains made during belief modification when it is introduced after the BM phase. SN's belief conviction can be seen to rise during his second MM phase, having fallen steadily during the previous BM phase. It would seem that MM is most beneficial when used to weaken the client's desire to maintain the delusional belief prior to BM. Once BM is underway, it appears that further attempts to weaken the client's motivation underpinning the belief are less beneficial than a continuation of the BM package.

However, MM does appear to have some beneficial effect on secondary measures even when administered after BM. For example, AF's final MM phase proved useful in a supportive role. In many respects, AF's belief served to define his role. When his delusion was successfully challenged, much of AF's personal construct system was disrupted. His scores for depression, anxiety and preoccupation rose as his belief

conviction fell. The final MM phase seemed to successfully limit the impact of these weakened states, and the phase ended with an overall drop in AF's depression, anxiety and preoccupation with the belief.

Rapport

Much of the effect of MM seems to be related to enhancing the quality and functionality of the therapeutic relationship. It is the author's opinion that in general, a good therapeutic relationship was established with all participants. Part of the final session involved a review of the treatment and of the progress made by each client; three of the five remaining participants (BN, SN and RS) stated during this session that they had welcomed the opportunity to discuss their delusions without being judged. This may explain the fact that attendance was very high throughout the research.

It is notable that the two participants who were least affected by the combined treatment package were also the two clients with whom the therapeutic relationship felt weakest to the author. PL's reluctance to participate actively in the study (either through apathy or fear of change) was evidenced by the absence of a strong collaborative relationship. Similarly, it is thought that problems in establishing rapport with CJ arose when the author remained non-committal regarding validity of his beliefs. For some of the later sessions, particularly those focusing on verbal challenge, CJ seemed to adopt a defensive and somewhat stubborn attitude, along the lines of "If you're not going to believe me, I'm not going to believe you".

In accordance with Chadwick & Lowe (1994), it would appear that a sound therapeutic relationship is a prerequisite to belief modification. It may be argued that by preceding BM therapy with motivational sessions designed to foster a collaborative relationship between client and therapist, the therapeutic relationship is strengthened. Subsequent reduction in belief conviction may in some way reflect this functional relationship in which both parties are pursuing the same goal. However, it may be argued that this collaborative relationship increases the influence demand characteristics might have upon self-report measures, and caution must be exercised when interpreting these measures. Demand characteristics are explored more fully later.

Hypothesis 2: That more progress will also be made in reducing clients' levels of depression when "belief modification" is preceded by "motivation modification" than when it is not.

Less support can be given to the second hypothesis, that clients' levels of depression are reduced when belief modification is preceded by motivation modification. Consistent with Milton, et al. (1978), the results from both conditions demonstrate some correlation between a decline in the strength of delusions and "a worthwhile reduction in psychiatric disturbance" as measured by the BDI. However, the difference in BDI scores between the two conditions was not as great as hypothesised. Four clients showed an overall drop in depression as recorded by the BDI, with PL recording no change, and AF showing an increase of three points. Hence, both treatments seem to address secondary depression with equal success. The fall in BDI scores was slightly higher in condition 1 than in condition 2, but in a study with just six participants, support for the hypothesis on the basis of these results would be tenuous. Importantly, there is no evidence that the combined MM and BM treatment has any deleterious effect on levels of depression or anxiety.

Hypothesis 3: That psychological reactance and symptom substitution will be lower in clients receiving "motivation modification" before "belief modification", than in clients receiving "belief modification" before "motivation modification".

Reactance was taken to be a rise in belief strength following a challenge to the belief. Using this definition, the results demonstrate some support for the concept of reactance.

Although the BM package involved preceding reality tests with verbal challenge, which has been shown to reduce psychological reactance (Chadwick & Lowe, 1990; Milton et al, 1978), the results from this study suggest that participants in condition 2 were more prone to reactance than clients in condition 1. For example, the belief conviction of both AF and BN underwent a substantial fall immediately following the implementation of verbal challenge (session 9). There was no subsequent rise in belief conviction after this initial fall. In contrast, the beliefs of RS (and to a much lesser extent CJ and PL) fell during the verbal challenge phase, but quickly rose back towards their former level, indicating a slight consolidation of the belief system in the face of verbal

challenge. However, the magnitude of this reactance does not seem to be very great, and RS's belief conviction dropped again soon after the sudden rise.

Nevertheless, these results may indicate that by preceding BM with MM, reactance is reduced in much the same way that the imposition of the verbal challenge before reality tests reduces reactance (Chadwick & Lowe, 1994). It is argued that from the results of this study, the optimal treatment design for minimising reactance appears to be:

Motivation Modification → Verbal Challenge → Reality Test

Hence, by focusing on the client's motivation to challenge the validity of their beliefs, it seems that subsequent implementation of Chadwick & Lowe's BM package is less likely to give rise to psychological reactance.

The accuracy of the hypothesis regarding symptom substitution is difficult to assess, as no client in this study demonstrated any sign of symptom substitution. This was monitored through a frequent examination of the client's scores on the BDI and the BAI, and by asking the client at the first session of each phase whether he/ she was experiencing any other difficulties or problems. Although symptom substitution in response to belief modification seems minimal (Chadwick & Lowe, 1994), the claim that symptom substitution is even less likely when BM is preceded by MM still holds intuitive appeal. The results of the current study do not enable this hypothesis to be tested, and additional research is necessary to investigate this further.

Hypothesis 4: That the levels of anxiety and preoccupation associated with the delusional belief will be lower at the end of treatment in clients receiving "motivation modification" before "belief modification" than in clients receiving the same treatment in reverse order.

This hypothesis was not supported. There was no significant difference between the two conditions in terms of overall reduction in anxiety (Table 3). Similarly, preoccupation associated with the delusional belief was remarkable in its stability; no change was evident between start and end scores for five of the six participants.

Notably, there did not appear to be any consistent relationship across clients between the PQ scores of preoccupation and anxiety. In the baseline phase, for example, every permutation of scores between these two measures was evident (Table 4).

Table 4: Inconsistency of scores for preoccupation and anxiety during baseline phase.

Participant	Preoccupation	Anxiety
CJ	Low	Low
PL	Low	High
SN	High	High
AF	High	Low

During the intervention phases, there was again considerable variability, and the relationship between these measures and the measures of self-esteem and mood was characterised by its inconsistency. Figures 2-3 to 7-3 show that a relationship between the measures of preoccupation, anxiety and belief conviction is highly dependent on the individual concerned. It is this idiosyncratic nature of delusional beliefs and the measures associated with their measurement that makes general hypotheses difficult to confirm. In this instance, the hypothesis is tentatively supported by some clients (BN and SN), whereas the results from other clients show no support for the hypothesis (CJ and AF) (see Figures 2-3 to 6-3).

Reaction to hypothetical contradiction

Brett-Jones et al., (1987) stated that *"subjects who ultimately entirely rejected their delusional beliefs dealt with hypothetical contradiction in a more rational way than those who did not"*. (p.261). The current study offers tentative support for this notion. For example, the only client to reject any form of hypothetical contradiction was also the client whose belief strength changed least. The results in this instance may also suggest that RTHC may be influenced by motivational factors, and that by focusing heavily on a client's motivation to seek out the truth before implementing verbal challenge and reality testing, response to RTHC may be improved, with clear implications for the success of the treatment as a whole.

However, as Chadwick & Lowe (1994) state, the relationship between response to RTHC and belief conviction is not always congruent. SN responded positively to RTHC which was at odds with his unchanged belief strength at the end of treatment, again

emphasising the necessity of focusing upon the individual in order to appreciate the complexity of a delusional belief.

Accommodation

Chadwick & Lowe (1994) found that reports of disconfirmatory events among their clients were rare, in spite of clear evidence that disconfirmation was occurring. The results of this study support this finding. Whilst all six participants frequently reported events which they perceived to support their delusions, only BN reported experiencing a disconfirming event. In this respect, MM does not appear to have influenced accommodation reports as much as might have been expected. Accommodation measures obtained here, as with other studies, demonstrate how delusional thinking is typified by a bias towards confirmation (Chadwick & Lowe, 1994). It would also appear that this bias towards confirmation is not a result of motivational factors.

CRITIQUE

Validity and reliability of measures

Clinical interviews do not take place under laboratory conditions, and are never wholly controllable. Therapeutic sessions are subject to a number of variables which have the potential to distort the results of clinical studies, and the effect of these variables needs to be taken into account when drawing conclusions from such a study.

In any study incorporating self-report measures, the issue of demand characteristics will inevitably limit the conclusions which can be drawn from these measures, and has the potential to diminish the validity of the responses. The current study relied heavily upon the validity of the clients' self-report measures, particularly upon the belief conviction percentage rating, and must therefore be interpreted with caution. However, self-reported belief conviction scores correlate highly with the belief conviction scores recorded by the modified version of the PQ (mean Pearson's $r = 0.89$), offering a certain degree of independent validation and demonstrating some consistency among clients. Nevertheless, future studies would benefit from the inclusion of objective measures and independent assessment.

As Himadi & Kaiser (1992) note, one of the problems of investigating delusional beliefs is the issue of 'private events'. Demand characteristics may result in changes to a client's *overt* verbal behaviour, whereas the behaviour remains unchanged at the *covert* level. Thus, the client may agree that their beliefs seem implausible to others, whilst never truly doubting the validity of the belief. However, it is argued that by utilising multiple independent assessments, such as those used in the present study, and from reports by other professionals involved in the care of some of the clients, an argument can be made in support of covert change.

A further limitation of the current design concerns the fact that the investigator was also the therapist. Research conducted under these conditions may be vulnerable to inadvertent coercion or bias in the administration and interpretation of results, despite attempts by the investigator to remain impartial. Further clinical research would benefit from alterations to the design, so that the likelihood of demand characteristics influencing the validity of the results would be minimised (e.g., by the use of an independent therapist). Clearly, it is difficult to eliminate factors such as demand characteristics and subliminal coercion from clinical research. Perhaps the best one can do is to remain vigilant, and to recognise the limitations of the methodology, making appropriate allowances in interpretation where necessary.

Finally, it is important to remember that all participants were on established drug regimes. Although the delusions had apparently resisted the effect of this medication, and although there is some evidence to suggest that cognitive behaviour therapy can be used to weaken delusions in people diagnosed as schizophrenic who are not taking medication (Chadwick & Birchwood, 1994), the influence of the medication in determining an individual's response to treatment should not be underestimated.

<u>Design limitations</u>

The nature of the design necessitated that phases change after five sessions. In practice, the introduction of a new phase sometimes seemed inappropriate, as each client progressed at differing rates. For example, it was felt that participant CJ would have benefited from further sessions of MM, so that his intransigent stance regarding the truth of his belief might have been addressed more thoroughly. Similarly, SN may have

benefited from a continuation of the BM phase, so that the progress made during this phase could have been consolidated.

One solution to this might be to continue the MM focus throughout the course of treatment, interspersing sessions of BM with sessions of MM. The combined package attempts to change the client's network of meaning, and as this network is changing, so too might be the advantages and disadvantages to change. By monitoring changes to motivation, treatment would remain open to the potential for uncovering further useful information which might make change easier for the client.

One practical issue involves the amount of input necessary for each participant in this study. However, the procedure used here sought to discover and modify core aspects of the participants' meaning networks. Given the complexity of this phenomena, the labour intensiveness of the procedure is perhaps unsurprising. Close analysis of people with clinical problems emphasises that it may be unrealistic to expect to usefully clarify and modify aspects of a person's meaning system from a brief and superficial focus. Marks (1979) puts the case more strongly, stating, *"One wonders whether the confidence of model builders is directly proportional to their distance from the clinical scene"* (p.175).

Owing to the limited time-scale of this study, it was not possible to obtain long-term follow-up measures for the five participants. However, follow-up appointments will be held three months after the end of the final phase, and will be conducted either by the author, or by the clinical supervisor. Assessment of the permanence of change in delusional beliefs following cognitive behaviour therapy is often neglected in many studies. By assessing the long-term effects of the two therapeutic approaches used here, it is hoped that the study will provide valuable information regarding the longevity of belief reduction as a result of the combined intervention. Furthermore, the follow-up will provide a more detailed picture of the nature of delusional thinking before, during, and after interventions designed to alter the belief.

Finally, the design may have benefited from a greater number of sessions in each phase. In retrospect, the baseline phase may have been too long in relation to the rest of the phases. Stability for the majority of measures had been established by the fifth session; had the baseline phase consisted of just these five sessions, the remaining three sessions could have usefully been added to the three subsequent phases. In particular,

the BM phase could have benefited from at least one extra session. Perhaps by limiting the BM phase to just five sessions, the efficacy of the BM package was jeopardised, particularly given that Chadwick & Lowe (1994) allocated between nine and eleven phases to their BM package.

Distribution of participants

Some merit can be given to the argument that the distribution of clients between the two conditions may not have been adequately balanced. There is some evidence to suggest that the two clients with the most immutable beliefs (CJ and PL) were both placed in condition 2 (as described earlier). Hence, the results may indicate a larger difference between treatment response than is actually the case, and may unfairly over-emphasise some of the advantages of condition 1 over condition 2. Consequently, any conclusions drawn from the study can only be tentative.

Another potential problem concerns the gender imbalance of the participants; five of the six participants were male. However, it is not thought that the gender imbalance would seriously compromise the validity of the results. No intuitive reason exists for assuming that delusional beliefs are fundamentally different between male and female clients, and the emphasis on the individual nature of delusions is again reiterated. There is no evidence in the literature that response to cognitive treatment of delusional beliefs is influenced by gender; however, future research aimed at verifying this assumption would be useful.

CONCLUSIONS

The results tentatively support the view that by addressing motivational issues concerning a strongly held delusional belief, before an attempt is made to modify the belief itself, the effect of cognitive behaviour therapy may be enhanced. Furthermore, the combined package can sometimes be a more effective intervention than belief modification alone. Less support is afforded to the suggestion that clients' levels of depression are reduced when belief modification is preceded by motivation modification. In support of the second hypothesis, reactance does appear to be less evident when BM therapy is preceded by MM therapy. In contrast, there was little distinction between

condition 1 and condition 2 regarding levels of anxiety and preoccupation associated with the belief, and the idea that these secondary characteristics of the delusional belief would be more responsive to the combined BM and MM package than to BM alone was not supported.

Both conditions were of some use in reducing the degree of belief conviction, with an overall drop in belief strength at the end of treatment evident in four of the six participants. Of the two participants whose beliefs did not weaken, there was no evidence to suggest that the adherence to the belief had strengthened. It is argued that whilst some clients may not be responsive to the combined MM and BM treatment, there appear to be very few risks associated with testing the efficacy of such a package.

The overall results were not as definitive as expected. This may be due in part to the success of the BM treatment, which has amassed a good deal of empirical support in recent years, and has been shown to achieve extraordinary results (Chadwick & Lowe, 1994). Clearly, improvements made to such a package are likely to be limited. Nevertheless, it is argued that the investigator was justified in pursuing Nightingale's (1996) original hypothesis, and that Chadwick & Lowe's (1994) belief modification package can be enhanced by the prior inclusion of motivation modification for some individuals.

The results introduce the possibility that delusional beliefs are more responsive to motivational factors than the emphasis within the existing literature on modifying delusional beliefs suggests. The results of this study also provide an additional challenge to those who assert that delusional beliefs, by definition, are fixed and not susceptible to corrective feedback. Instead, these results support Hole et al.'s (1979) hypothesis of a two-way relationship between delusional beliefs and external events. However, given the limited number of patients, heavy reliance on self-report data and absence of a follow-up assessment, these findings should be viewed tentatively. Future research is needed to further examine the relevance of motivational issues in the cause, maintenance and treatment of delusional beliefs.

As with any preliminary research, it is difficult to see many of the issues until the research has been done. General principles regarding delusional beliefs are difficult to establish, as individual variation demands detailed individual analyses. The author feels that the present study illustrates the continued need for analysis of delusional beliefs on

an individual level, with cross-case comparisons integrating both qualitative and quantitative data. Data for individual clients show a high degree of variation in the relationships between the main belief measures (degree of conviction, preoccupation and anxiety), and thus lend support to Kendler et al.'s (1983) multidimensional view of delusions. Elucidation of delusions seems best accomplished through the use of single-case methodology; use of more general methodologies would unnecessarily limit findings to general theories in a field characterised by the highly individual nature of the phenomena under investigation.

The study sought to describe the procedure and outcome of a promising treatment package as clearly as possible, so that refinements to the approach may be made by future research. In particular, there is some scope for developing guidelines for MM, in terms of summarising the most useful elements of the package. It is not claimed that the other researchers (such as Chadwick & Lowe, 1994) have failed to address the issue of motivation. However, in terms of establishing guidelines for other therapists, the significance of motivation needs to be explicit, not implicit as has previously been the case.

General interpretations of the data in this study have been limited both by the idiosyncratic nature of delusional beliefs, and by the reluctance to restrict analysis of the theoretical implications of the results to the author's own interpretations. The study provides some preliminary analyses which future research may wish to address in more detail. One of the merits of a largely descriptive study is that the reader may notice trends that the investigator may have missed. As Barnes & Pickering (1985) assert, *"Implications, like beauty (or ugliness) are in the eyes of the beholder"* (p. 161). In any case, perhaps the limited results caution that empirical research should outweigh theoretical speculation.

Investigation into the psychological treatment of delusional beliefs is still in its infancy, and there remain a number of both methodological and conceptual problems that make many of the conclusions suggestive rather than definitive. Yet, as the current findings demonstrate, it seems clear that psychological therapy has an increasingly important and effective role to play. As Chadwick & Lowe (1994) state, *"the weight of evidence... now indicates that we should put aside the question of whether delusions can be modified and concentrate instead upon the more interesting questions surrounding*

the processes of maintenance and change" (p. 366). The results of this study seem to indicate that motivational issues are more influential both in maintaining and in changing delusional beliefs than was previously reported.

REFERENCES

Alford, B.A. (1986). Behavioural treatment of schizophrenic delusions: A single-case experimental analysis. Behaviour Therapy, 17, 637-644.

Barlow, D.H., Hayes, S.C. & Nelson, O.C. (1986). The Scientist Practitioner: Research and Accountability in Clinical and Educational Settings. New York: Pergamon Press.

Barnes, R.D. & Pickering, J.D. (1985). Nature Versus Nurture. Lanham: University Press of America.

Beck, A.T. (1976). Cognitive Therapy and the Emotional Disorders. New York: International Universities Press.

Beck, A.T., Rush, A.J., Shaw, B.F. & Emery, G. (1979). Cognitive Therapy of Depression. New York: Guilford Press.

Beck, A.T., Steer, R.A. & Garbin, M.G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical Psychology Review, 8, 77-100.

Beveridge, W.I.B. (1964). The Art of Scientific Investigation. London: Mercury.

Bentall, R.P. (1993). Deconstructing the concept of "schizophrenia". Journal of Mental Health, 2 (3), 223-238.

Birchwood, M. & Tarrier, N. (1992). Innovations in the Psychological Management of Schizophrenia. London: John Wiley & Sons.

Brehm, J.W. (1962). A Theory of Psychological Reactance. New York: Academic Press.

Brehm, J.W. (1976). Responses to loss of freedom: A theory of psychological reactance. In J.W. Thibaut, J.T. Spence, & P.C. Carson. Contemporary Topics in Social Psychology. New Jersey: General Learning Press.

Brett-Jones, J., Garety, P.A. & Hemsley, D.R. (1987). Measuring delusional experiences: A method and its application. British Journal of Clinical Psychology, 26, 257-265.

Buss, D.M. & Craik, K.H. (1983). Contemporary world views: Personal and policy implications. Journal of Applied Social Psychology, 13, 259-280.

Cameron, N. (1959). The paranoid pseudocommunity revisited. American Journal of Sociology, 65, 52-58.

Chadwick, P.D.J. (1990). Guidelines for belief modification: supplement to PhD thesis. University College of North Wales, Bangor.

Chadwick, P.D.J. & Birchwood, M.J. (1994). The omnipotence of voices: A cognitive approach to auditory hallucinations. British Journal of Psychiatry, 165, 190-201.

Chadwick, P.D.J., Birchwood, M.J. & Trower, P. (1996). Cognitive Therapy for Delusions, Voices and Paranoia. Chichester: Wiley.

Chadwick, P.D.J. & Lowe, C.F. (1990). Measurement and modification of delusional beliefs. Journal of Consulting and Clinical Psychology, 58 (2), 225-232.

Chadwick, P.D.J. & Lowe, C.F. (1994). A cognitive approach to measuring and modifying delusions. Behaviour Research and Therapy, 32, 355-367.

Chadwick, P.D.J., Lowe, C.F., Horne, P.J. & Higson, P.J. (1994). Modifying delusions: The role of empirical testing. Behaviour Therapy, 25 (1), 35-49.

Chadwick, P.D.J. & Trower, P. (1996). Cognitive therapy for punishment paranoia: A single-case experiment. Behavioural Residential Therapy, 34, 351-356.

Dykman, R.A. (1979). The Gantt and Eysenck conditioning models for neurosis. Reply to Eysenck: The conditioning model of neurosis. Behavioural and Brain Sciences, 2, 155-159.

Deaux, K. & Wrightsman, L.S. (1988). Social Psychology. California: Brooks/Cole.

Fennell, M.J.V. (1992). Depression. In K. Hawton, P.M. Salkovskis, J. Kirk., & D.M. Clark (Eds), Cognitive Behaviour Therapy for Psychiatric Problems, pp. 169-234. Oxford: Oxford University Press.

Fowler, D., Garety, P. & Kuipers, E. (1995). Cognitive Behaviour Therapy for Psychosis. Chichester: Wiley.

Fowler, D. & Morley, S. (1989). The cognitive-behavioural treatment of hallucinations and delusions: A preliminary study. Behavioural Psychotherapy, 17, 267-282.

Freud, S. (1950). Psychoanalytic notes upon an autobiographical account of a case of paranoia (dementia paranoides). In Collected Papers, Vol. 3. London: Hogarth Press.

Garety, P.A. (1985). Delusions: Problems in definition and measurement. British Journal of Medical Psychology, 58, 25-34.

Goldiamond, I. (1975). A constructional approach to self-control. In Schwarz, B. & Goldiamond, I. (Eds), Social Casework: A Behavioural Approach, pp. 67-130. New York: Columbia University Press.

Hartman, L.E. & Cashman, F.E. (1983). Cognitive-behavioural and psychopharmacological treatment of delusional symptoms: A preliminary report. Behavioural Psychotherapy, 11, 50-61.

Hemsley, D.R. (1986). Psychological treatment of schizophrenia. In S. Lindsay & G. Powell (Eds), Handbook of Clinical Psychology. London: Gower.

Himadi, B., Osteen, F., Kaiser, A.J. & Daniel, K. (1991). Assessment of delusional beliefs during the modification of delusional verbalisations. Behavioural Residential Treatment, 6, 355-366.

Himadi, B. & Kaiser, A.J. (1992). The modification of delusional beliefs: A single-subject evaluation. Behavioural Residential Treatment, 7, 1-14.

Hoenig, J. (1968). The clinical usefulness of the phenomenology of delusion. International Journal of Psychiatry, 6 (1), 41-45.

Hole, R.W., Rush, A.J. & Beck, A.T. (1979). A cognitive investigation of schizophrenic delusions. Psychiatry, 42, 312-319.

Jaspers, K. (1913). General Psychopathology. Translated by J. Hoenig & M.W. Hamilton, 1959. Manchester: Manchester University Press.

Johnson, W.G., Ross, J.M. & Mastria, M.A. (1977). Delusional behaviour: An attributional analysis of formation and modification. Journal of Abnormal Psychology, 86, 421-426.

Lowe, C.F. & Chadwick, P.D.J. (1990). Verbal control of delusions. Behaviour Therapy, 21, 461-479.

Kendler, K.S., Glazer, W.M. & Morgenstern, H. (1983). Dimensions of delusional experience. American Journal of Psychiatry, 140, 466-469.

Maher, B.A. (1988). Anomalous experience and delusional thinking: the logic of explanation. In T.F. Oltmanns & B.A. Maher (Eds), Delusional Beliefs, pp. 15-33. New York: Wiley.

Marks, I.M. (1979). Conditional models for clinical syndromes are out of date: Reply to Eysenck: The conditioning model of neurosis. Behavioural and Brain Sciences, 2, 155-199.

Milton, F., Patwa, K. & Hafner, R.J. (1978). Confrontation vs. belief modification in persistently deluded patients. British Journal of Medical Psychology, 51, 127-130.

Mullen, P. (1979). Phenomenology of disordered mental function. In P. Hill, R. Murray & G. Thorley (Eds), Essentials of Postgraduate Psychiatry, Ch. 2. London: Academic Press.

Nightingale, D. (1996). Cognitive-behavioural treatment of delusional beliefs: A single-case experimental analysis. Unpublished research, University of Wales.

Phillips, J.P.N. (1977). Generalised personal questionnaire techniques. In P. Slater (Ed), Dimensions of Intrapersonal Space, pp. 195-246. New York: Wiley.

Piasecki, J. & Hollon, S. (1987). Cognitive therapy for depression: Unexplicated schemata and scripts. In N.S. Jacobson (Ed), Psychotherapists in Clinical Practice, pp. 121-152. New York: Guilford.

Popper, K.R. (1977). On hypotheses. In P.N. Johnson-Laird & P.C. Wason (Eds), Thinking: Readings in Cognitive Science, pp. 264-274. Bath: Cambridge University Press.

Reber, A.S. (1985). The Penguin Dictionary of Psychology. London: Penguin.

Rudden, M., Gilmore, M. & Francis, A. (1982). Delusions: when to confront the facts of life. American Journal of Psychiatry, 139, 929-932.

Seligman, M.E.P. (1974). Depression and learned helplessness. In R.J. Friedman & M. Katz (Eds), The Psychology of Depression: Contemporary Theory and Research. Washington DC: Winston-Wiley.

Shapiro, M.B. (1961). A method of measuring psychological changes specific to the individual psychiatric patient. British Journal of Medical Psychology, 34, 151-155.

Slade, P.D. & Bentall, R.P. (1988). Sensory Deception: A Scientific Analysis of Hallucination. London: Croom Helm.

Strauss, J.S. (1969). Hallucinations and delusions as points on continua function. Archives of General Psychiatry, 21, 581-586.

Tarrier, N. (1992). Management and modification of residual positive psychotic symptoms. In M. Birchwood & N. Tarrier (Eds), Innovations in the Psychological Management of Schizophrenia. Chichester: Wiley.

Trower, P., Casey, A. & Dryden, W. (1988). Cognitive Behavioural Counselling in Action. Bristol: Sage.

Vygotsky, L.S. (1962). Thought and Language. New York: Wiley.

Watts, F.N., Powell, E.G. & Austin, S.V. (1973). The modification of abnormal beliefs. British Journal of Medical Psychology, 46, 359-363.

Williams, J.M.G. (1992). The Psychological Treatment of Depression: A Guide to the Theory and Practice of Cognitive Behaviour Therapy. London: Routledge

APPENDICES

Appendix 1: Procedure for administering Phillips's (1977) modified version of Shapiro's (1961) Personal Questionnaire (PQ).

Each client was asked to provide one sentence which they felt accurately represented their delusional belief. Where more than one distinct delusional belief was evident, sentences were devised for all beliefs.

One of the sentences was placed in front of the client. The client was then shown 5 pink cards, each representing increasing levels of belief conviction (see Table 1.). The client was asked to place each of these randomly ordered cards next to a sign labelled "More" or a sign labelled "Less", according to whether his/ her belief conviction was more or less than the level indicated on the pink cards. When the client had placed all the pink cards, the next sentence was shown to the client, and the process was repeated.

The test score was taken when the client had placed all 5 pink cards, and was defined by the number of cards which the client had placed in the "More" pile.

A similar procedure was used for the measurement of the Preoccupation and Anxiety associated with each belief. Again, these two additional card sort tasks involved placing a further 5 cards which represented increasing levels of Preoccupation and Anxiety (see Table 5.). Hence, for each belief, the client was asked to perform 3 separate card-sorting tasks.

Table 5. The wording used for the Personal Questionnaire measures of conviction, preoccupation and anxiety.

Score	Conviction	Preoccupation	Anxiety
0	My belief is almost definitely false	Over the past 3 days, I have thought about my belief once	Thinking about my belief, I get hardly anxious at all
1	... probably false	... 2 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			

NB: PQ scores fall between two verbal descriptions: e.g., for Anxiety, one might respond *more* to "Fairly Anxious", but *less* to "Very Anxious", giving a score of 3.

Garety (1985) offered convincing evidence that the modified PQ can reliably measure the intensity and fixity of delusional beliefs, and that they could therefore be made subject to systematic experimental investigations. Whilst the evidence concerning the reliability and validity of the PQ is far from definitive, the test has been very widely used by many researchers and is gaining a valued reputation for providing speedy, useful data of immediate consequence to the therapeutic process.

Appendix 2: Client Consent Form

After having discussed the above named research project with _____, I understand the nature and purpose of the project and am willing to take part in it. I understand that as part of the therapeutic procedure, I will be invited to discuss issues that may currently be upsetting or distressing, on the understanding that participation in therapy may help to make these issues less upsetting.

I recognise that the therapeutic procedure does not deliberately employ aversive techniques. Furthermore, I understand that I am under no obligation to remain involved in the research project, and that I am free to withdraw from the research at any time, either during a session or between sessions, without needing to give any explanation.

I am aware that some parts of my therapeutic sessions may be transcribed as part of the final research, and I consent to this on the understanding that all identifying details are changed or removed. Furthermore, I understand that any tape recordings made of my sessions will be treated in strict confidence and will be destroyed after having analysed.

I understand that therapeutic sessions are scheduled to take place twice-weekly, over a period of 14 weeks. Should I wish to continue therapy after this period, this will be negotiated with the therapist.

I hereby consent to take part in the above named research project.

Signed: _____ Date: _____

Appendix 3: Raw Data (All measures for all participants).

Participant AF

Session Number	Belief Strength (DJs)	Belief Strength (Aeroplanes)	BDI	BAI	PQ Conviction	PQ Preoccupation	PQ Anxiety	Mood	Self-Esteem
1.	100	100			5	3	0	80	75
2.	100	100	5	7	5	3	0	70	75
3.	100	100			5	4	0	90	80
4.	100	100	4	7	5	4	1	80	75
5.	100	100			5	4	0	70	75
6.	100	100	5	7	5	4	0	70	75
7.	100	100			5	5	0	75	70
8.	100	100	5	6	5	4	0	70	70
9.	100	100			5	5	0	60	70
10.	100	100	5	7	4	5	1	40	60
11.	100	100			5	5	1	40	50
12.	100	100	4	6	5	5	0	50	50
13.	100	100			5	4	1	50	50
14.	100	100	5	7	3	4	0	60	60
15.	100	100			3	5	1	50	60
16.	100	50	9	7	3	4	0	50	60
17.	50	50			3	5	2	40	60
18.	20	0	9	9	0	5	1	30	50
19.	20	0			0	4	1	35	50
20.	20	0	8	8	0	4	1	50	50
21.	0	0			0	3	1	60	60
22.	0	0	8	7	0	3	0	50	60
23.	0	0			0	3	1	50	60

Participant BN

Session Number	Belief Strength	BDI	BAI	PQ Conviction	PQ Preoccupation	PQ Anxiety	Mood	Self-Esteem
1.	80			3	3	3	10	30
2.	80	13	13	4	3	5	5	30
3.	85			3	3	4	10	30
4.	95	13	14	3	2	4	10	40
5.	80			4	4	3	20	40
6.	80	13	12	4	3	4	20	40
7.								
8.	70	13	15	3	3	4	30	50
9.	80			3	3	4	40	60
10.	80	12	18	3	4	4	20	60
11.	80			4	3	3	40	75
12.	70	12	14	3	2	3	40	70
13.	80			3	3	4	30	50
14.	50	12	12	2	5	4	40	40
15.	50			2	5	4	40	30
16.	30	9	11	1	4	4	40	40
17.	20			0	5	4	30	40
18.	20	9	13	0	5	4	30	40
19.	0			0	4	4	30	60
20.	10	10	13	1	4	4	35	60
21.	10			1	3	3	40	70
22.	0	9	11	0	4	3	50	65
23.	10			0	3	3	50	75

Participant SN

Session Number	Belief Strength	BDI	BAI	PQ Conviction	PQ Preoccupation	PQ Anxiety	Mood	Self-Esteem
1.	60			4	4	3	20	20
2.	60	26	20	4	4	3	20	20
3.	60			4	5	4	20	20
4.	60	24	17	4	5	3	20	10
5.	70			5	5	3	20	10
6.	60	24	22	5	5	4	20	20
7.	60			4	5	3	20	10
8.	60	24	16	4	5	3	20	10
9.	60			4	5	3	20	10
10.	60	23	17	4	4	3	40	10
11.	60			4	4	3	40	10
12.	60	22	21	4	4	3	40	30
13.								
14.	60	25	23	4	4	4	20	20
15.	50			3	5	4	30	30
16.	50	22	23	3	4	4	40	30
17.	50			3	5	3	30	40
18.	40	21	19	3	5	3	30	30
19.	40			3	4	2	30	30
20.	50	21	18	4	4	3	20	30
21.	50			4	4	3	20	30
22.	60	21	20	4	4	3	20	30
23.	60			4	4	3	20	30

Participant CJ

Session Number	Belief Strength	BDI	BAI	PQ Conviction	PQ Preoccupation	PQ Anxiety	Mood	Self-Esteem
1.	100			5	1	2	30	60
2.	100	17	16	5	1	3	30	70
3.	100			5	0	2	40	60
4.	100	16	14	5	0	2	40	60
5.	100			5	1	2	40	60
6.	100	14	16	5	1	2	40	60
7.	100			5	2	3	40	60
8.	100	16	13	5	1	2	50	60
9.	100			5	0	2	50	60
10.	100	19	11	5	0	2	40	40
11.	100			5	2	2	40	50
12.	90	22	11	5	2	2	30	40
13.	100			5	2	3	40	40
14.	100	15	11	5	3	2	40	50
15.	100			5	3	3	40	60
16.	100	15	12	5	3	3	60	60
17.	100			5	3	3	60	60
18.	100	15	14	5	4	2	50	60
19.	100			5	3	3	50	60
20.	100	16	12	5	3	3	50	60
21.	100			5	3	2	50	50
22.	100	14	11	5	3	2	40	60
23.	100			5	2	2	40	50

Participant RS

Session Number	Belief Strength	BDI	BAI	PQ Conviction	PQ Preoccupation	PQ Anxiety	Mood	Self-Esteem
1.	100			5	2	5	5	60
2.	100	35	18	5	2	4	10	80
3.	100			5	3	4	10	65
4.	100	33	22	5	3	4	5	50
5.	100			5	2	4	10	70
6.	100	30	22	5	3	5	10	70
7.	100			5	3	4	10	70
8.	100	25	20	5	3	4	10	70
9.	100			3	3	5	10	60
10.	80	31	21	4	3	4	10	50
11.	100			5	3	5	5	60
12.	100	31	19	4	3	5	10	60
13.	70			4	3	4	10	60
14.	80	27	19	3	2	4	10	70
15.	70			4	3	3	20	70
16.	80	27	15	4	3	4	20	70
17.	80			4	3	3	20	70
18.	80	27	17	4	3	3	20	70
19.	70			4	3	4	20	60
20.	70	25	18	4	3	4	20	60
21.	65			4	2	4	5	50
22.	65	25	18	4	2	3	15	70
23.	60			4	2	3	15	70

Participant PL

Session Number	Belief Strength	BDI	BAI	PQ Conviction	PQ Preoccupation	PQ Anxiety	Mood	Self-Esteem
1.	100			5	3	2	55	75
2.	100	14	9	5	3	2	53	75
3.	100			5	2	3	58	66
4.	100	14	10	5	3	2	55	79
5.	100			5	3	3	60	73
6.	100	14	16	5	2	3	58	70
7.								
8.	100	15	15	5	2	4	53	70
9.								
10.	90	15	18	5	3	3	51	71
11.	85			5	3	3	58	68
12.	90	14	18	5	3	2		

Further information regarding the implementation of "motivation modification" is available on request from:

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