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Belief change in Cognitive-Behavioural Therapy

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Belief Change in Cognitive-Behavioural Therapy

Abstract

The literature review '*Belief change in cognitive-behavioural therapy (CBT): what do current cognitive models propose are the cognitions that should be targets for CBT? What is the evidence that these cognitions change during cognitive therapy for depression ?*' considers the evidence for Beck's (1967;1976) theory that dysfunctional cognitions maintain depression and that CBT alleviates depression by altering these cognitions. The review suggests that there is insufficient evidence to suggest that substantial cognitive change occurs during CBT and that it is this change alone that leads to distress reduction. Alternative models of the mechanisms of change in CBT are introduced and the review then makes recommendations for further research to investigate the process of change in CBT.

The empirical paper '*Belief change in CBT for people with auditory-hallucinations*' presents a single-case multiple-baseline design study investigating the impact of three components of cognitive-behavioural therapy (CBT) proposed to be the active factors in CBT for psychosis, on negative self-evaluative beliefs, delusional beliefs and distress levels. The study also explored the relationship between the two beliefs. Four individuals with a diagnosis of schizophrenia (DSM IV; American Psychiatric Association, 1994) and treatment resistant, subjectively distressing voices participated.

Formulation had little or no impact on belief conviction or levels of distress. For all participants there was a significant positive correlation between the two beliefs.

Literature Review

Belief change in cognitive-behavioural therapy (CBT): what do current cognitive models propose are the cognitions that should be targets for CBT? What is the evidence that these cognitions change during cognitive therapy for depression ?

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Abstract

Beck's (1967;1976) cognitive model of depression states that dysfunctional cognitions are responsible for the maintenance of depressed mood. In order to alleviate depression, cognitive-behavioural therapy (CBT) targets for change cognitive products, processes and structures. This paper reviews the evidence for Beck's theory that dysfunctional cognitions maintain depression and that they change during CBT. The review suggests that there is insufficient evidence to suggest that substantial cognitive change occurs during CBT and that it is this change alone that leads to distress reduction. Alternative models of the mechanisms of change in CBT are introduced and the review then makes recommendations for further research to investigate the process of change in CBT.

Belief change in cognitive-behavioural therapy (CBT): what do current cognitive models propose are the cognitions that should be targets for CBT?

What is the evidence that cognitions change during CBT for depression ?

Cognitive-behavioural therapy (CBT) is an effective treatment for a range of clinical disorders (Hollon & Najavits, 1988). It is based on cognitive theory (Beck, 1967) which proposes that CBT alters disorder maintaining cognitions and this leads to distress reduction. However, there is limited empirical evidence to support this assumption and it remains unclear which cognitions should be targeted and whether change in these cognitions is responsible for distress reduction. This literature review will focus on exploring the limited empirical evidence which demonstrates that altering dysfunctional cognitions leads to a reduction in distress.

The review will concentrate on Beck's model of depression as this model has been most fully elaborated and tested empirically. CBT integrates both cognitive and behavioural change methods. While there is substantial evidence to support the efficacy of behavioural interventions (see Wilson, Goldin, & Charbonneau-Powis, 1983) this evidence is beyond the scope of this review which will focus exclusively on the role of cognitive interventions within CBT. The terms cognitive-behavioural therapy and cognitive therapy are used interchangeably within the literature, this review will use the term cognitive-behavioural therapy (CBT).

Section one will start with a definition of Beck's cognitive theory and therapy. It will then go on to define the cognitions that are targets for change in CBT for depression. The review will then describe the development of his theory up to the recent addition of 'modes' (Beck, 1996). The section will outline the empirical evidence for cognitive change and will identify gaps in the research literature. The

questions to be addressed are;

- What are the cognitions that should be targeted in CBT?
- What is the evidence for the role of these cognitions in maintaining depression?
- What is the evidence that CBT changes cognitions? Do changes in these cognitions bring about distress reduction?

In section two the discussion will describe alternative perspectives on mechanisms of cognitive change proposed by multi-level models of psychopathology. The section will begin with Beck's theory of 'modes' and will highlight how Beck's theory has developed and increasingly converges with multi-level models such as the Interacting Cognitive Subsystems model (Teasdale & Barnard, 1993). In the final section, the implications from this review for further research and clinical practice will be discussed.

Cognitive theory.

Beck, (1967) used the term 'cognitions' to refer to the full range of processes that support thinking, and also to the contents or products of these processes, namely thoughts themselves. Beck's cognitive theory assumes that change in maladaptive cognitive products, processes, and structures is critical to symptomatic improvement from emotional disorders such as depression. Consequently, the central tenet of cognitive theory is that CBT alleviates symptomatic distress by altering the maladaptive structures and processes that characterise emotional disorders.

Cognitive-behavioural therapy

CBT is a set of active, collaborative, skill-training therapies which share the assumption that dysfunctional thinking contributes to the maintenance of

psychopathology and that cognitive change leads to clinical improvement. CBT uses both behavioural and cognitive techniques within a collaborative patient-therapist relationship (Clark & Beck, 1999). There is significant empirical support for the application of CBT to a variety of emotional disorders (Hollon & Najavits, 1988; Hollon, Shelton, & Loosen, 1991). Recent studies have shown that CBT for depression, when compared to pharmacotherapy, is more likely to have a long term impact and reduce relapse rates (Gloaguen, Cottraux, Cucherat, & Blackburn, 1998; Paykel, Scott, Teasdale, Johnson, Garland, Moore, Jenaway, Cornwall, Hayhurst, Abbott, & Pope, 1999).

Definitions of cognitions

Cognitions have been classified in a number of ways, but for the purposes of this review, the distinction made by Hollon and Kriss (1984) between cognitive products, processes and structures is particularly useful, as it provides a framework for the review and also provides a heuristic classification system which has been adopted by other researchers in the field. It does however have its limitations as it is clear that these three domains are part of a dynamic and reciprocal system (Hollon & Kriss, 1984). The next section will examine how cognitions could fit within this framework.

Cognitive products. Cognitive products represent the surface level of an individual's cognitive structures and processes and operate at a conscious level. Cognitive products have been defined as self-statements (Michenbaum, 1975), automatic thoughts (Beck, 1970) and beliefs (Ellis, 1962).

Cognitive processes. Cognitive processes are said to be the means by which underlying structures are translated into cognitive products (Nisbett & Ross, 1977). These processes operate at a less manifest level and determine how incoming information is perceived, encoded, combined, and altered with respect to information and structures already in the system. Cognitive processes also determine how existing information is retrieved and once existing structures are engaged how they are disengaged or altered (Hollon & Garber, 1990).

Within depression, attentional and memory bias to negative events is common and maintains the depressed state (Mineka & Sutton, 1992). Clark and Beck (1999) argue that depression is characterised by a selective processing bias for mood-congruent negative self-referent information. Beck's (1976) 'cognitive distortions' -for example: selective abstraction, arbitrary inference, personalisation, and dichotomous thinking- are the result of this negative bias. These distortions lead depressed people to draw conclusions that confirm their negative expectations and maintain their depression.

Cognitive structures. Cognitive structures are organised entities that contain all of an individual's knowledge at any given moment about the self and the world. Cognitive theories assume that these structures are fairly stable organisers of cognitions (Nisbett & Ross, 1977). Cognitive structures contain information and are stored in an organised fashion. Schemas are an example of these knowledge structures (Williams, Watts, MacLeod, & Mathew, 1997). Segal (1988) defines schemas as:

not designed to make experimentally testable predictions but rather to guide treatment.

It is not always clear whether specific cognitions should be defined as processes or structures, as each are so inter-related. For example a schema is most frequently defined as a structure, however information is processed through these structures (Beck, 2000), and therefore, schemas could also be defined as a cognitive process. A limitation of this framework of levels of cognition is that it is based primarily upon research into depression. Despite this limitation the classification system has heuristic value and provides a useful working framework. As such it will be used to structure the next section of this review.

Summary. Empirical evidence has demonstrated that therapy based on cognitive theory is effective and according to Beck (1967) CBT works by altering key cognitions which are associated with distress. In order to investigate whether cognitive change occurs in CBT, Ingram (1990) and Hollon and Kriss (1984) advocate investigating cognitive products, processes and structures in order to elucidate the mechanisms of change in CBT. However, investigating cognitive change is complicated by the fact that these three levels of cognition lack a clear and consistent definition, probably do not exist independently of each other and currently there are few effective methods of measuring them.

The next section will focus on negative-automatic thoughts which have traditionally been viewed as the targets for CBT of depression (Beck et al., 1979). The section will consider the following questions: how are negative-automatic thoughts defined? What is the evidence that they are problematic and should negative-automatic thoughts be the principal target for treatment? Does altering negative-automatic thoughts change dysfunctional beliefs and reduce depression?

'organised elements of past reactions and experience that form a relatively cohesive and persistent body of knowledge capable of guiding subsequent perception and appraisal' (p147).

By using the term schema within his cognitive model of depression, Beck (1967, 1976) draws from the established literature in cognitive psychology (Anderson, Speilman, & Bargh, 1981; Bartlett, 1932) and social cognition (Taylor & Crocker, 1981) on schematic processing and schema theory. However, the incorporation of so many different theoretical perspectives makes it difficult to arrive at a clear and consistent definition. Beck himself has used different definitions. For example, schemas are defined as:

'the basis for screening out, differentiating, and coding the stimuli that confront the individual. He categorises and evaluates his experience through a matrix of schemas' (Beck, Rush, Shaw, & Emery, 1979). (p13)

Also in Beck et al., (1979) schemas are defined as:

'cognitions (verbal or pictorial events in the stream of consciousness) are based on attitudes or assumptions (schemas) developed from previous experiences'.(p3)

More recently this has been altered slightly to:

'controlling beliefs.' (p4) (Beck, Freeman, & Associates, 1990).

Since his first definition of schemas, Beck's definition seems to oscillate between defining schemas as structures and processes.

Beck (1967) suggests that as structures, schemas can have qualities of flexibility-inflexibility, openness-closedness, permeability-impermeability and concreteness-abstractness. However, this has yet to be proven empirically. In general, these differing definitions and the fact that schemas are 'hypothetical structures' makes empirical testing very difficult. Williams et al. (1997) suggest that Beck's model was

Cognitive products

Cognitive models of psychopathology emphasise the role of dysfunctional thinking patterns in the development and maintenance of emotional disorders (Segal, Lau, & Rokke, 1999). Theorists have used different terms to define cognitive products; this review will use Beck's (1976) term 'negative-automatic thoughts' as the review focuses on his theory.

Negative automatic thoughts

Aaron Beck (1967;1976) asserts that emotional disorders are maintained by a 'thinking disorder'. Beck's cognitive theory of depression (1967) placed considerable importance upon negative thinking which he identified as the primary level of problematic cognitions; these cognitions are termed 'negative-automatic thoughts' which are appraisals or interpretations of events, that elicit particular behavioural and affective responses (Clark & Beck, 1999). Negative-automatic thoughts are defined as: transient, highly specific and discrete, spontaneous and involuntary, plausible, consistent with the individuals current affective state or personality disposition, and a biased representation of reality including the self (Clark & Beck, 1999). Within depression, Beck uses the term 'cognitive triad' to refer to negative thinking patterns about the self, the world and the future.

Rather than implying that depression is a consequence of experiencing negative-automatic thoughts, Beck (1996) suggests that the stream of negative-automatic thoughts in patients' consciousness represent the surface level manifestation of the underlying dysfunctional processing and are therefore a product of depression not a cause of it. As a result, negative-automatic thoughts have a role to play in the maintenance of depression, rather than a causal role in its development. What is the

empirical evidence for this and should CBT target negative-automatic thoughts to alleviate depression? The next section will review the methods use to measure negative-automatic thoughts and the empirical evidence for the existence and role of negative-automatic thoughts in maintaining depression.

Measurement of negative-automatic thoughts. Current empirical evidence is based upon a number of different methods of identifying automatic thoughts. These include; self-report questionnaires, interview, and 'on-line' strategies (Segal, 1988).

Self report questionnaire include the Automatic Thoughts Questionnaire, (ATQ, Hollon & Kendall, 1980) and the Attributional Style Questionnaire, (ASQ, Seligman, Abramson, Semmel, & von Baeyer, 1979). The ATQ consists of 30 negatively valenced thought statements, respondents indicate how frequently each thought occurred to them over the preceding week. The ASQ requires individuals to attribute the major cause of six positive and six negative hypothetical events. They rate the cause of the event along three attributional dimensions of internality, globality and stability.

A number of methodological criticisms have been made concerning self-report measures (see Clark, 1997 for a review). For example, it is possible that self-report data is contaminated by the participants' ability to report covert events, by the accuracy of memory processes or by demand characteristics. The ATQ may predict depressed mood because the individual may be endorsing items on the basis of their depressive experience rather than their conscious thought content.

Interview and 'on-line' strategies (e.g. thinking aloud, thought listing, thought sampling) are methodologies that attempt to assess automatic thoughts in a less structured, more open-ended and more ecologically valid format (Segal & Swallow,

1994). The strength of these methods is that they can provide rich, clinically-meaningful information. However, they are of limited use as a research measure due to a lack of standardisation in administration and scoring which leads to inadequate reliability and validity (Segal & Swallow, 1994). To address these methodological issues, Clark and Beck (1999) suggest using concurrent methods of cognitive assessment (self-report questionnaire, thinking aloud, etc.) in further research.

The measurement of negative-automatic thoughts is subject to a number of methodological problems, therefore the results of research using these measures must be viewed with caution. The next section will review the empirical evidence for the existence and role of negative-automatic thoughts in depression.

Empirical evidence for the existence and the role of automatic thoughts in depression. Negative-automatic thoughts were first noted by Aaron Beck as a result of clinical observation. This initial finding was supported by empirical research (Beck, 1967) which showed that in depression the content of automatic thoughts is predominantly negative, stressing past losses and failures. Since this finding, a large number of studies have shown that during clinical and non-clinical depressed states, there is a significant elevation in negative thought content about the self, future and personal world (see Clark & Beck, 1999 for a review), and that these negative thoughts largely return to normal levels with recovery (Haaga, Dyck, & Ernst, 1991). Research has found that the presence of these problematic thoughts can lead to affective, behavioural and physiological responses characteristic of depression (Teasdale & Rezin, 1978).

Empirical evidence suggests that negative-automatic thoughts characterise depression. However, many of the studies have relied solely upon self-report



inventories and therefore more research is needed to verify these findings (Clark & Beck, 1999). The next section will review whether negative-automatic thoughts are altered during CBT and what impact altering negative-automatic thoughts has on symptoms of depression.

Empirical evidence for change in negative-automatic thoughts. According to Clark & Steer (1996) if dysfunctional cognitions are crucial to the maintenance of depressive symptoms, then change across a broad range of behavioural, emotional and somatic symptoms can only be achieved by modifying these cognitions. According to Williams et al. (1997) changes in automatic thoughts and cognitive distortions can effect rapid and marked symptomatic improvement.

Relatively few empirical studies have reported findings that directly link cognitive change in CBT with improvement in symptoms of depression. Teasdale and Fennell (1982) found that reductions in negative thinking were associated with improved mood and Persons and Burns (1985) found significant associations between the degree of mood change and change in negative thinking following CBT. Both these studies indicate that a reduction in negative thinking may be responsible for a reduction in depressive affect. They do not, however, account for the fact that as mood improves so negative thinking remits. The cognitions may not have changed; it may be simply that mood has changed. In addition the small samples used in these studies limit the conclusions that can be drawn.

In their meta-analysis of 44 studies of therapy for depression, Oei and Free (1995) report that only 21 treatment studies satisfactorily examined the relationship between change in cognition and change in depression. These studies included CBT, other psychological therapies, drug therapy and a waiting-list control condition. The most

commonly used measures of cognitive change were the ATQ and the DAS (Dysfunctional Attitudes Scale, Weissman & Beck, 1978). The DAS will be discussed later as it is designed to measure the content of cognitive structures not cognitive products. Oei and Free concluded that positive cognitive change and improvement in depressive symptoms occurred for all the treated groups and there was no evidence of superiority of any one treatment. When the relationship between cognitive change and change in depression was considered, Oei and Free found a clear positive relationship both for CBT and other psychological therapies and a less clear positive relationship in the case of drug therapy. The authors conclude that the study provides support for the basic tenet of CBT - that cognitive change occurs during therapy for depression. Again, this study shows that a reduction in depressive mood is associated with a reduction in negative-automatic thoughts and dysfunctional attitudes but it does not demonstrate that cognitive change has a causal role in symptom improvement. It is possible that negative-automatic thoughts remit as mood improves and that therapy is effective without targeting and changing cognitions explicitly.

More recently, Oei and Sullivan (1999) investigated cognitive changes following group CBT in 35 recovered and 32 non-recovered mood disordered patients. They found that patients defined as recovered (score of less than 10 on the Beck Depression Inventory, BDI, Beck & Steer, 1987), had ATQ scores that were in the non-clinical range, compared to their non-recovered counterparts. This study suggests that a reduction in negative-automatic thoughts is associated with depressive symptom reduction.

Hollon et al. (1991) used the ASQ and found that CBT led to a reduction in the tendency to make global, internal and stable attributions for negative events, and

to a reduction in depressive relapse. In addition, patients with the least depressotypic causal attributions following therapy were the least likely to relapse following treatment termination. This study provides more evidence to suggest that cognitive change leads to improvements in depressive symptomatology and that cognitive change reduces risk of relapse. However, none of these studies show directly that it is cognitive change that produces the positive effects of CBT. Clark and Beck (1999) suggest that more research is needed to identify whether a reduction in conviction in specific negative thoughts leads to reductions in other depressive symptoms.

Summary There is considerable evidence for the existence of negative-automatic thoughts in depression. Change in negative-automatic thoughts is associated with reduced symptoms of depression. However, on the basis of the available evidence we cannot say conclusively that CBT reduces distress by altering cognitive products. The studies reviewed above do not clarify the level at which cognitive change actually occurs- is it at the cognitive product level or at a deeper level? Without explicitly targeting and measuring these different levels of cognition, the mechanisms of change cannot be elucidated. In addition, it is unclear which components of CBT bring about change.

Cognitive Processes

Negative-automatic thoughts in depression are thought to represent the end product of a number of biased cognitive processes. The next section will review evidence for the existence of biased information processing in depression and consider whether these processes change as a result of CBT. CBT for depression suggests that the products of biased cognitive processing-cognitive distortions-need to be targeted. What is the evidence that cognitive processes change as a result of

CBT?

According to Beck, (1967) in states of high emotion, or in clinical emotional states like depression, biases in cognitive processing become pronounced. The next section will briefly review the empirical evidence for this clinical observation and examine the evidence that CBT changes cognitive processes in depression.

Measurement. A number of paradigms drawn from cognitive psychology have been used to assess cognitive processes in depression. The paradigms used to assess attentional bias include; stimulus identification, lexical decision, Stroop interference, visual dot probe and dichotic listening tasks. Memory bias is most commonly assessed using recall tasks (Segal et al., 1999). There is no specific measure of the cognitive distortions which Beck (1967) describes therefore it has not been possible to assess whether these change following successful CBT.

Empirical evidence for existence and role of attentional bias in depression. A number of studies have investigated whether attention differs in people with depression. Studies using the Stroop task have shown that depressed individuals show an attentional bias toward negative words (Williams & Nulty, 1986; Gotlib & McCann, 1984). However, other studies using the Stroop, have not found an attentional bias (Hedlund & Rude, 1995; Hill & Knowles, 1991). Mathews and Antes (1992) used a method of tracking eye movements to compare visual attention for pictures with both happy and sad content, in mildly depressed and non-depressed participants. They found that depressed participants fixated on sad regions significantly more often than non-depressed participants. In contrast to these findings, Gotlib, McLachlan, and Katz (1988) using a variant of the visual probe

detection task, the deployment-of-attention- task, did not find a bias toward negative information in depression, but rather a bias toward attending to positive stimuli in normal mood. To explain these mixed results, Bradley, Mogg, and Lee (1997) argue that bias in depression occurs later in the information processing system with processes that are involved in sustained attention.

The range of paradigms used to assess attentional bias and the fact that few studies use clinical participant samples makes cross study comparison difficult and limits the conclusions that can be drawn. In summary, there is some evidence of an attentional bias in depression, this bias may have a role in maintaining depressed mood.

Empirical evidence for change in attentional bias. A small number of studies have explored change in attentional bias following CBT. Segal and Gemar (1997) found a significant reduction in negative interference scores for self-referent adjectives on the Stroop task in depressed patients who had improved following CBT for depression. McCabe and Gotlib (1993) found that individuals who had recovered from depression no longer exhibited a selective attentional interference effect from negative content adjectives in a focused-attention dichotic listening task. The limited empirical evidence suggests that CBT can improve attentional bias in depression. However, an alternative explanation for these results may be that attentional bias remits as depressed mood remits.

Empirical evidence for existence and role of memory bias in depression. Research suggests that depression is associated with both impaired memory skills and a bias for the recall of negative events (Burt, Zembar & Niederehe, 1995; Johnson &

Magaro, 1987; Mathews & MacLeod, 1994). A number of studies have shown that depression makes the recall of extremely unhappy memories more probable (Teasdale & Fogarty, 1979; Teasdale & Taylor, 1981). There is also evidence of an autobiographical memory deficit; depressed and suicidal patient's memory for the past is over-general and they retrieve summaries of past events rather than specific events (Williams, Teasdale, Segal, & Soulsby, 2000). The combination of an autobiographical bias with a bias for retrieval of negative events makes the recall of specific positive events less likely and may further maintain low mood.

Empirical evidence for change in memory bias. Williams et al. (2000) randomly allocated recovered depressed patients to either treatment as usual or mindfulness-based CBT designed to reduced risk of relapse. Whereas control patients showed no change in specificity of memories recalled in response to cue words, the treatment group showed a significant reduced number of generic memories. This suggested that CBT reduced the memory bias in depressed individuals for generic memories.

Mindfulness (Teasdale, 1999) is a treatment that encourages participants to allow their cognitions to occur without trying to suppress or avoid them. In the long-term this aims to assist participants to make conscious choices and decisions and not fall back into habitual patterns of dysfunctional thoughts. Williams et al. (2000) hypothesise that those who received mindfulness training no longer suppressed or avoid thoughts, attended to more specific events and were therefore more able to recall specific events. This study suggests that CBT can alter cognitive processes.

Summary. The research described suggests that there is some evidence of attentional and memory bias in depression. Preliminary research indicates that these

processing bias can be altered using psychological therapy. However, while it is possible that depressive symptomatology is improved due to a reduction in cognitive processing bias, there is a lack of evidence to demonstrate that this is the mechanism of change underlying the effectiveness of CBT.

Cognitive processes are said to reflect the existence of underlying cognitive structures, it remains unclear whether interventions that alter cognitive processes also alter cognitive structures. It is in this area that the distinction between products, processes and structures becomes less helpful. The evidence presented in the previous section may be better explained by proposing a change in cognitive structures rather than in cognitive processes.

In more complex disorders, Teasdale (1999) argues that it is not sufficient to target only the cognitive products and that it is necessary to target the processes underlying the disorder. Williams, Healy, Teasdale, White, and Paykel (1990), suggest that for some individuals remission is unlikely to be maintained if therapy has failed to address the enduring beliefs, rules and attitudes that underlie a patient's emotional disturbance. According to cognitive theory (Beck, 1967) distortions in cognitive products and processes reflect the operation of underlying cognitive structures. In order to ensure continued distress reduction it may be necessary to target cognitive structures.

According to Beck, cognitive structures contain the core beliefs and dysfunctional assumptions that govern information processing. The assumption is that maximum change will occur if cognitive structures are targeted in therapy. What is the evidence for this assumption? The next section will describe these underlying cognitive structures and their contents. It will outline theoretical and empirical evidence concerning their role in depression and consider whether or not core beliefs and

dysfunctional assumptions are changed during therapy. The section will also examine what impact changes in dysfunctional assumptions and core beliefs has on symptomatology.

Cognitive structures

Beck's (1976) theory places the greatest emphasis upon cognitive structures and argues that enduring reductions in distress will only be produced if this level of cognition is altered.

Schemas

According to Clark and Beck (1999) schemas are triggered by certain life events and once activated, influence information processing, shape the interpretation of experience and affect behaviour. In depression, schemas contain dysfunctional assumptions and core beliefs, which are said to maintain the disorder. Beck (1967) hypothesised that in depression, idiosyncratic schemas involving themes of personal deficiency, self-blame and negative expectations dominate the thinking processes. A specific situation or stressor that would be expected to lower self-esteem might activate the depressive schemas in vulnerable individuals. Once activated the depressogenic schemas lead to cognitive biases and negative-automatic thoughts.

Both the content and structure of depressive schemas are problematic. Maladaptive schemas that characterise emotional disorders are hypothesised to be more rigid, inflexible and concrete, than the schemas of normal individuals (Beck, 1967). However, Beck does not provide empirical evidence to support this assertion. Recent cognitive theorists have subdivided schemas into different types such as Young's (Young, 1994) distinction between 'unconditional' (I am unlovable) and

'conditional' (If I am criticised, that means I am unlovable) schemas. This distinction between schemas has yet to be empirically validated.

Within the cognitive theory of depression, it is the content of schemas that is given most consideration. Beck (1996) suggests that schema content exists at different levels of specificity and generality. Some schemas deal with specific beliefs, others involve conditional assumptions (dysfunctional assumptions) and others represent core issues for the individual (core beliefs).

Empirical research has investigated both the structure and content of schemas. Due to the limitations of this literature review I will concentrate on the contents of schema, as it is the content of schemas that are the target for change in CBT. The review will now focus the contents of schemas, dysfunctional assumptions and core beliefs. The review will consider in turn the evidence for their existence and role in depression and whether they are changed during cognitive therapy.

Dysfunctional Assumptions

Dysfunctional assumptions are conditional beliefs that according to Beck, (1987) are an important part of schemas in depression. The terms, dysfunctional attitudes and dysfunctional assumptions are used interchangeably in the literature but the term dysfunctional assumptions will be used here. Dysfunctional assumptions are said to develop as a result of early experiences, operate beyond conscious awareness and influence information processing. They are said to be conditional and represent contingencies between events and self-appraisal. An example of a dysfunctional assumption would be 'in order to be loved, I must be perfect'.

Beck (1987) proposed that dysfunctional assumptions produce a cognitive vulnerability to depression. His cognitive model suggests that dysfunctional

assumptions remain latent until triggered by a stressful life event, which may relate to one of the individual's dysfunctional assumptions (Clark & Beck, 1999). This assertion forms the basis of Beck et al.'s (1979) '*diathesis-stress*' hypothesis.

According to (Beck et al., 1979),

'the theory proposes that early experiences provide the basis for forming negative concepts about the self.....these...may be latent but can be activated by specific circumstances which are analogous to experiences initially responsible for embedding the negative attitude' (p16).

Measurement. One of the most commonly used questionnaires to measure the contents of schemas is the Dysfunctional Attitudes Scale (DAS, Weissman & Beck, 1984). It measures the extent to which individuals hold maladaptive beliefs and assumptions. The DAS correlates significantly with levels of depressive symptoms, and has good internal consistency (Hammen & Krantz, 1985; Merluzzi & Boltwood, 1989). A number of criticisms have been made of the DAS. Firstly, the measure requires individuals to make conscious responses to items relating to structures that are hypothesised to operate automatically beyond conscious awareness. In addition, it is possible that the DAS scores of individuals with a history of depression may represent, to at least some degree, 'scars' from prior episodes rather than untainted cognitive vulnerability. The next section will review the evidence concerning the existence and role of dysfunctional assumptions in depression.

Empirical Evidence for existence and role of dysfunctional assumptions in depression. Beck (1976) proposes that dysfunctional assumptions are predictive of depression and that they are stable, enduring and exist independent of changes in

mood. In support of this assertion, studies comparing depressed individuals with non-depressed controls show a positive relationship between dysfunctional assumptions and depression (Dobson & Shaw, 1986; Barnett & Gotlib, 1990; Lewinsohn, Steinmetz, Larson & Franklin, 1981) and that dysfunctional assumptions become undetectable as an episode of depression remits (Persons & Rao, 1985; Silverman, Silverman, & Eardley, 1984; Hollon, Kendall, & Lumry, 1986).

Using prospective studies, researchers have found that high levels of dysfunctional attitudes do predict later episodes of depression (Joiner, Metalsky, Lew, & Klocek, 1999; Rush, Weissenburger, & Eaves, 1986; Simons, Murphy, Levine, & Wetzel, 1986). However, others have failed to replicate this finding (Barnett & Gotlib, 1990; Hollon et al., 1986).

Recent studies used an emotional priming methodology to induce depressed mood (Velten, 1968) have provided more support for the diathesis-stress hypothesis. These studies have shown that elevated levels of dysfunctional cognitions can be detected in patients who have recovered from depression, if tested when a low mood is induced. Miranda and Persons (1988) and Miranda, Persons, and Byers (1990) showed a positive association between dysphoric mood and the reported dysfunctional attitudes in formerly depressed participants but not in never-depressed controls experiencing similar levels of sadness following emotional priming. To explain these mixed results, Persons and Miranda (1992) propose a mood-state dependent hypothesis. They propose that the dysfunctional assumptions that are vulnerability factors to depression are stable, but that they are only accessible to conscious awareness during negative mood-states. These findings contradict Beck's (1967) suggestion that dysfunctional assumptions exist independent of mood changes.

However, in contrast to previous findings, despite a mood induction, Brosse, Craighead, and Craighead (1999) found no difference in DAS scores in 30 previously depressed and 33 individuals with no life-time mood disorder. They found that dysfunctional cognitions increased significantly from pre. to post mood induction for all participants. Research shows that prior to a negative mood induction there are few differences on measures of negative views of the self or dysfunctional depression related attitudes between never-depressed and recovered depressed individuals. However, when mood is low, the majority of studies demonstrate that recovered depressives show higher scores on both these measures (Segal et al., 1999; Ingram, Miranda & Segal., 1998).

There is evidence that depressed individuals hold dysfunctional assumptions. However, there is less evidence that dysfunctional assumptions cause depression and for the proposition that dysfunctional assumptions are stable and non-reactive to mood changes. Barnett and Gotlib (1990) suggest that dysfunctional beliefs might represent consequences or correlates of depression rather than vulnerability factors. An alternative explanation is that the DAS is not adequate to measure dysfunctional attitudes under all conditions. The next section will review the evidence that CBT changes dysfunctional assumptions.

Empirical evidence for change in dysfunctional assumptions. In order to conclude that CBT changes dysfunctional assumptions, there needs to be evidence that scores on the DAS have reduced following CBT. In addition, given that dysfunctional assumptions may not be accessible during non-depressed mood, they should be measured following a negative mood induction.

Segal, Gemar, and Williams (1999) studied scores on the DAS following a mood induction in formally depressed patients in order to assess whether they still held

dysfunctional assumptions that would potentially trigger depression (termed level of cognitive reactivity). They used a sample of 25 patients who had recovered from depression following CBT and a sample of 29 patients who had recovered following pharmacotherapy (PT) . Each participant completed the DAS before and after a negative mood induction procedure. In response to similar levels of sad mood, those patients who had recovered following pharmacotherapy showed a significant increase in DAS score compared to those patients who had recovered through CBT. The study also investigated the effects of cognitive reactivity (judged by the degree of change in patients' thoughts in response to a challenge) on the course of patients' depression. The study conducted a follow-up of 30 patients, (10 CBT and 20 PT) and found that regardless of treatment, patients' responses to the mood induction were predictive of depressive relapse. The changes in dysfunctional cognitions observed following the mood challenge and their association with future relapse provide empirical support for some aspects of the cognitive vulnerability hypothesis (Beck, 1967; Hollon, 1992).

There is limited evidence to suggest that dysfunctional assumptions change as a result of CBT. There is also limited research to suggest that those individuals who recover from depression following CBT show changes in their dysfunctional assumptions. However, the research reviewed does not provide any evidence that it is change in the contents of schemas that leads to a reduction in depression. In order to investigate further whether CBT changes the content of schemas, the next section will present the empirical evidence for the existence and role of 'core beliefs' within depression.

Core beliefs.

At the broadest level of generality within schemas are core beliefs. Core beliefs are those beliefs that are most applicable to the individual and form an important component of the self-concept. They are usually expressed in terms of absolute statements and generally refer to attributes about the self. According to Beck (1996), core beliefs are more global, over-generalised and absolute than intermediary beliefs. For the purposes of this review, I have defined core beliefs as one of the contents of schemas, however, Clark and Beck (1999) refer to core beliefs as core schema. It is unclear whether the term schema refers to beliefs or structures within which beliefs exist.

Depression-prone individuals may hold core beliefs such as 'I am a failure' or 'I am worthless'. Beck (1996) defines core beliefs as consisting of the most sensitive components of the self-concept such as: vulnerability, worthlessness etc. and the most primitive views of others as: rejecting, hostile, demeaning etc. Core beliefs are said to possess a positive-negative polarity that may be manifest in many different ways. Under normal circumstances, the positive self-concepts can neutralise the negative self-concepts, but when experiencing stress or an adverse life circumstance the negative polarity of the core beliefs will emerge (Beck, in press). This suggests that it is only when an individual is depressed that core beliefs are accessible. However, this hypothesis concerning the availability of core beliefs to consciousness is not supported by empirical evidence. Beck (1987) hypothesises that core beliefs develop at an early stage of development as a result of the child's interaction with significant others. Longitudinal research is required to assess this assertion as it is yet to be empirically proven. Young (1994) terms the deepest level of cognition 'early maladaptive schemas' which are formed largely in very early childhood. These

schemas are implicit, unconditional themes held by individuals. They are perceived to be unrefutable and are taken for granted. Young (1994) suggests that they serve as a template to process later experiences and therefore define a person's behaviours, thoughts, feelings and relationship. The rigid nature of these schemas are similar to Beck's definition of core beliefs, however Young's schemas place more emphasis on schemas as information processing structures. As yet, Young's definition of schema is not supported by empirical evidence.

Chadwick, Trower, and Dagnan (1999) use the term negative self-evaluations, to refer to the 'core' beliefs identified by Beck. Chadwick et al. (1999) draw on Ellis's (1962) definition of negative evaluations of the entire 'person' as the most potent of all beliefs in generating dysfunctional affective and behavioural consequences (Ellis, 1994).

Measurement. Current methods of measuring core beliefs primarily consist of questionnaire measures. Young (1994) developed the Young Schema Questionnaire. The YSQ is a self-report measure, which is intended to address a range of unconditional core beliefs, which he terms 'early maladaptive schema'. These beliefs are universal (i.e., independent of the immediate context), and include constructs such as abandonment (the belief that one will eventually be deserted by others) and defectiveness/shame (the belief that one has unacceptable, irreparable flaws). Schmidt, Joiner, Young, and Telch (1995) have shown that the primary scales of the YSQ possess good test-retest reliability and internal consistency, with the majority of proposed scales being replicated by two factor analyses. The YSQ has also been found to possess convergent and discriminant validity with respect to measures of psychological distress, self-esteem, cognitive vulnerability for depression, and personality disorder symptoms (Schmidt et al., 1995).

Chadwick et al. (1999) developed the Evaluative Beliefs Scale which measures three directions of person evaluations (other-self, self-self, self-other), and covers the major areas of interpersonal concern (unlovability, failure, inferiority, badness and weakness). The measure has been shown to have good internal reliability, a clear factor structure and concurrent validity when compared to the Hospital Anxiety and Depression scale (Zigmond & Snaith, 1983).

Both these measures have only recently been developed and further research is required to assess their utility in measuring core beliefs. In addition, neither of these measures explicitly measures Beck's definition of core beliefs. If Beck's hypothesis concerning the availability to consciousness of core beliefs is correct, then these measures should only be used with people who are currently depressed or following a mood induction procedure. The next section will review the empirical evidence for the existence and role of core beliefs.

Empirical evidence for the existence and role of core beliefs in depression. There are few studies that have explicitly explored core beliefs in depressed individuals. Using the definition of core beliefs as negative self-evaluations, Dykman (1996) asked mildly depressed and non-depressed students to imagine 16 positive or negative hypothetical life experiences and to rate their self-evaluation after each scenario on 49 trait adjectives. The mildly depressed individuals endorsed more extreme, global negative self-evaluations, compared to the non-depressed individuals who tended to make more circumscribed self-evaluations. Due to the lack of measures for core beliefs there is very little evidence beyond clinical report that core beliefs exist.

Empirical evidence for change in core beliefs Lack of measures again makes evidence that core beliefs change during CBT scarce. Single-case studies however,

provide an ideal methodology for exploring changes in idiosyncratic self-beliefs during CBT. Chadwick (1994) used Personal Questionnaire (PQ; Phillips, 1977) ratings of conviction in two core beliefs 'I am a failure' and 'I am stupid and inept' to measure change in one individual treated with CBT for depression. Conviction in both core beliefs fell when CBT was introduced.

As yet the YSQ and Negative self-evaluative beliefs scale have not been used to evaluate cognitive change in CBT for depression and as a result there is only single-case data to suggest that core beliefs are altered following CBT. It could be argued that it is only the PQ that can measure core beliefs given their idiosyncratic nature.

Summary of evidence of cognitive change. There is evidence that dysfunctional assumptions are present in depressed individuals and that these dysfunctional assumptions are reduced on recovery from depression. There remains little evidence that negative core beliefs are present in depression due to the complex methodological issues, in addition there is little evidence that core beliefs are altered during CBT.

Overall, the studies discussed have shown that there is some evidence that cognitions change as a result of CBT and that this change in cognition is associated with a reduction in depressive symptomatology. However, these studies do not provide evidence that cognitive change causes distress reduction. It is clear that the process of change in CBT is more complex, however, one possibility is that cognitive change mediates the effectiveness of CBT.

Hollon, Evans, and DeRubeis (1990) have delineated criteria, adapted from Baron and Kenny (1986) for the results of a study to provide evidence that a cognitive variable mediates the relapse prevention effects of CBT. They argue that in order to claim that changes in a cognitive variable mediates the observed reduced risk of

relapse, there must be an effect of CBT on post-acute treatment measures of the variable (cognitions). In addition, those measures should predict subsequent long-term outcome when the variable 'treatment' is also included in the regression. The inclusion of the cognitive variable as a covariate should reduce the treatment effect on long-term outcome. However, as yet the only measure that has been shown to meet these criteria in a randomised controlled trial is the ASQ. Hollon et al. (1990) using this measure found that CBT led to both a reduction in depressive attributional style and relapse rates.

Based upon Beck's (1967) cognitive model of depression, there is a lack of evidence to suggest that cognitive change occurs in cognitive therapy and that this change leads to a reduction in depressive symptomatology. In addition, as yet there is little evidence that cognitive change mediates a reduction in depressive symptomatology.

In a recent review of the cognitive theory and therapy of depression, Clark and Beck (1999) have attempted to address the limited explanatory power of the earlier cognitive model of depression and have further developed the cognitive model. The next section will review whether these developments can further elucidate the mechanisms of change in CBT.

Beck's theory of 'modes'

The view that maladaptive idiosyncratic meaning structures or schemas form the basis of the cognitive dysfunction in emotional disorders has been the central premise of cognitive theory for the past 30 years. Recently Beck (1996) has articulated several shortcomings with confining the conceptualisation of emotion-related meaning structures (schemas) to this single cognitive level of analysis.

According to Beck (1996) schemas fail to account for:

- The high degree of symptom complexity seen in psychological disorders
- The broad systematic bias evident across many psychological domains suggesting a more global and complex schematic organisation
- Information processing in normal as well as abnormal emotional experiences
- The cognitive basis of personality and its apparent continuity to psychopathology.

As a result of these shortcomings, Beck's theory of emotional disorders has shifted away from idiosyncratic negative schemas to broader, superordinate schematic constellations that are said to reflect personality orientations or modes (Beck, 1996). The concept of mode is said to represent a broader, more integrative, and organising construct in the representation of meaning (Beck, 1996) than the more basic concept of schema. The mode includes not only cognition but also affective, physiological, behavioural and motivational schemas organised to deal with particular demands placed on the organism. Information processing at the modal level is characterised as more complex, integrative and global, automatic, effortless, less analytical and hypervalent. Once activated a mode easily dominates the information processing system. Distinct emotions and psychopathological states result from the activation of different modes.

Three major categories of mode are proposed in cognitive theory:

- Primal modes, which deal with immediate or basic issues related to the evolutionarily derived objectives of the organism (Beck, 1996) Examples of these primal modes are; threat modes (anxiety disorders) and loss or deprivation mode (depression).

- Constructive modes. These modes promote productive activities aimed at increasing the vital resources of the individual (Beck, 1996).
- Minor modes, which represent information related to more prosaic activities in our everyday lives such as reading, writing etc.

Modes in Depression

Within clinical conditions the primal modes may be unusually hypervalent and overgeneralised. For example in individuals with a cognitive vulnerability to depression the primal loss mode (see above) will be prepotent and so more readily activated by a variety of situations that impinge on the individual. Activation of the loss mode in the vulnerable person tends to dominate the information processing system, thereby preventing the activation of more adaptive compensatory modes of thinking. Cognitive theory proposes that individuals predisposed to clinical disorders such as depression may have latent hypervalent primal threat and loss modes that remain in a chronic state of activation so that relatively minor events can result in their activation (Beck, 2000). According to Beck, one of the tasks of CBT is to help the depressed patient process novel and schema incongruent aspects of situations so that alternative constructive modes of thinking are primed and the depressogenic primal loss mode is de-activated.

Although Beck's recent theoretical developments are an attempt to broaden his model to account for recent research findings, they remain empirically unsubstantiated and re-emphasise the need for further research to elucidate the mechanisms underlying the cause and maintenance of depression. In addition, the fact that Beck's model is continually changing makes it very difficult to compare it to other models and to derive specific hypotheses to test empirically.

However, it is apparent that Beck's model seems to be moving away from a single-level theory of emotion, and suggesting that it is not only cognition that has a role to play in producing and maintaining emotional disorders. This development converges with the current multi-level models of emotion which suggest that the route to emotion is not simply from negative cognition to negative emotion. These developments may provide an alternative explanation for the mechanisms of change in CBT. The next section will consider the interacting cognitive subsystems (Teasdale & Barnard, 1993) model and its hypotheses as to the mechanisms underlying distress reduction.

**Interacting Cognitive Subsystems,
a multilevel theory of depression**

There is limited empirical evidence that the effects of CBT are solely due to cognitive change, therefore theorists have suggested alternative explanations for the success of CBT. A number of other cognitive theorists have concluded that a global or broader level of representation is needed to account for the cognitive basis of emotion (Epstein, 1994; Leventhal, 1985; Mandler, 1982; Mischel & Shoda, 1995; Oatley & Johnson-Laird, 1987; Teasdale & Barnard, 1993). Therefore, a number of multi-level models of emotion have been developed. Multi-level models are based upon cognitive network theories, in particular Bower's (1981) associative network model. Bower suggests that networks are developed between mood nodules and memory nodules, as a result mood can precipitate changes in thinking and changes in thinking can precipitate changes in mood. A number of multi-level models have been proposed (Bower, 1981; Brewin, 1989; Power & Dalgliesh, 1999). This review will

focus on Teasdale and Barnard's (1993) Interacting Cognitive Subsystems (ICS) analysis as this is currently the most comprehensive and empirically supported model and is based on research into depression.

ICS suggests that there are a number of different levels at which therapy can have an impact on depression, not simply via cognition. According to Teasdale (1999), to alleviate depression, change is required in the whole processing configuration not just in single beliefs. ICS suggests that in attempting to understand the emotional effects of events, it is helpful to consider separately the contributions from different kinds of information, and their interactions, rather than to lump them all together in some general concept of cognition (Teasdale, 1999).

The next section will provide a brief overview of ICS and then explore how this model explains the mechanisms of change in CBT. The first part provides a brief description of the ICS model. It is important to recognise that although the terms used to describe ICS are similar to those used by Beck e.g. schematic mental models, the definitions and the proposed role they play are very different. According to Teasdale (1999), schematic mental models:

'encode the inter-relationships between core features of experience, providing the high order interpretative structure through which self and world are experienced'
(p248).

According to ICS these interpretative models change with mood. In contrast to Beck's theory of schemas, the ICS definition puts more emphasis upon structure, whereas Beck concentrates more on content, that is specific beliefs.

Interacting Cognitive Subsystems (ICS; Teasdale & Barnard, 1993)

The ICS is a comprehensive information processing model of depression.

According to the model, different aspects of experience are represented by patterns of different kinds of information or mental codes. For example, at a superficial level, experience is coded in visual, auditory, and proprioceptive inputs. At a deeper level, patterns of sensory codes are represented by intermediate codes. For example, different visual input from objects seen from different perspectives are represented in the object code. At an even deeper level, there are mental structures related to meaning. The model distinguishes between two levels of higher order meaning, the propositional and the implicational codes. The propositional level representations can be represented in a linguistic form which has a true-false value 'I am worthless' whereas the implicational codes represent a more holistic level of meaning which is linked to the emotions. According to the ICS framework, emotional reactions are produced when patterns of low-level meanings and patterns of sensorily derived input produce emotion-related schematic models. For example; the social phobics recall of past social disasters will evoke an immediate physical arousal response which confirms the belief that the social situation will be a disaster (Clarke, 1999). Therefore habitual patterns of response can be set up which Teasdale and Barnard (1993) identify with 'schematic models'. Unlike Beck's 'schema' these 'schematic models' contain both propositional and implicational codes, whereas Beck's schemas are purely propositional. It is only in Beck's theory of modes that he includes sensory and emotional meaning. According to Teasdale and Barnard in order to alter these habitual responses the individual needs to process new information at the propositional level. Therefore a higher-order schematic level change is required rather than simply a cognitive change.

According to Teasdale and Barnard's (1993) analysis, the goal of preventing depressive relapse involves changes in the ease of reactivation of a whole processing

configuration rather than changes in particular beliefs or assumptions that are the more traditional targets of CBT. According to ICS analysis the task of therapy is to replace the schematic models maintaining depression with more adaptive alternative schematic models. The maintenance of depression is said to be dependent upon the integrity and persistence of the interlocked processing configurations. These configurations require a number of interlinked feedback loops, therefore the total configuration is vulnerable to attack by interventions that create changes at a number of peripheral points. Changing schematic models requires attention to a wider semantic context not simply invalidating specific meanings. Teasdale (1999) argues that the primary focus should be on creating a whole alternative view at a schematic level.

Unlike Beck's model, ICS suggests that depression is not solely due to dysfunctional cognitions but is the result of the synthesis of schematic mental models which can be triggered by both implicational and propositional code. The next sections will discuss how ICS proposes change occurs in CBT and the empirical evidence for this proposed mechanism of change.

The ICS proposed mechanisms of cognitive change. Teasdale (1999) proposes that schematic level change can be achieved through effective emotional processing which involves the creation of modified affect-related schematic mental models. He proposes that effective emotional processing leads to changes in the ability of triggering cues to reactive depressogenic processing cycles at the times of potential relapse. Rather than CBT for panic altering cognitive products in order to reduce distress, Teasdale (1999) suggests that the mechanism of change within CBT for panic (Clark, 1988) is by creating whole alternative 'views' or 'models' of anxiety

and panic, rather than serially invalidating specific negative beliefs.

In contrast to purely 'cognitive' models and treatments of depression, the ICS analysis suggests that the higher-level meanings derived from situations can be powerfully influenced by techniques that modify purely sensory elements. According to Teasdale (1999) emotional processing should focus on changing emotional responses to internal affective events and thoughts, so that these responses are short lived and self-limiting rather than the beginning of an escalating process.

ICS questions the validity of the emphasis within Beck's cognitive model upon negative-automatic thoughts as maintaining depression. Teasdale and Barnard (1993) suggest that there is a lack of evidence to suggest that CBT reduces distress simply by altering cognitive products. In accordance with the most recent developments of Beck's model of depression (1996) ICS argues that surface-level thoughts, available to awareness, have no direct or necessary role in the production of depression (Teasdale, 1999). Teasdale (1999) argues that measures of negative-automatic thoughts as normally used have failed to provide any convincing evidence that the effects of CBT are mediated through changes in negative-automatic thoughts (Barber & De Rubeis, 1989). Teasdale (1997) proposes that rather than beliefs changing as a result of CBT, therapy has its effect by altering the reactivity of schematic models. Within the ICS analysis (Teasdale & Barnard, 1993), there is a place for modifying thoughts and images, but only if, in doing so, change is achieved at the level of higher-order meanings. They propose that procedures that successfully modify negative thoughts may also modify the schematic models from which the thoughts were derived. By modifying a thought and its related specific meaning, one may be changing a specific section of an affect-related implicational (sensory) code pattern, this may then be sufficient to change emotional response.

Teasdale and Barnard (1993) suggest that the emphasis upon negative-automatic thoughts should be shifted, as the ICS model suggests that there is no direct route from propositional levels of representation (automatic thoughts) to emotion. According to the ICS analysis, the primary antecedent to the production of a depressed emotional response is the synthesis of depressogenic schematic models, rather than the experience of negative thoughts or the production of negative specific meanings. Teasdale (1999) suggests that among those vulnerable to major depression, the depressed state is associated with changes in the schematic models relating self-worth to the approval and disapproval of others, or to the success or failure of personal projects not simply changes in automatic thinking. Therefore, therapy needs to focus on preventing the synthesis of these depressogenic schematic models.

In support of the need for a broader based change, Padesky (1994) makes a distinction between 'changing minds' (getting patients to admit that specific negative thoughts or beliefs that they are told are inconsistent with available evidence) and guided discovery (helping patients to gain alternative, wider perspectives on problematic situations). Padesky (1994) suggests that therapy should aim to create alternative 'schematic' level models, rather than concentrating on the invalidation of specific thoughts and feelings.

What is the evidence that the ICS analysis provides a more effective method of treating depression? Is targeting schematic models more effective than targeting cognitive products? The next section will review the empirical evidence for the ICS analysis of depression and the evidence that schematic models change during CBT.

Empirical evidence for the ICS model of change in CBT. To support the ICS model research has been conducted to provide evidence for the existence of

schematic mental models during depression. Teasdale, Lloyd, and Hutton (1998) compared depressed and non-depressed samples on a sentence completion task concerning anticipated outcomes of social approval or success. They predicted that more positive completions from depressed participants would demonstrate the evidence of a underlying higher-order construct (schematic mental model). The results showed that depressed participants made more positive completions in the sentence completion task, and scored higher on the dysfunctional attitudes scale than the non-depressed participants. Teasdale et al., conclude that this together with other studies with similar findings (Teasdale, Segal, & Williams, 1995) demonstrates that negative depressed thinking reflects a change in schematic mental models through which the world is interpreted. Sentence completion tasks are only one method of measuring schemas. Further research using a number of different methods of measuring schemas would strengthen the conclusions that can be drawn.

Teasdale (1999) suggests that when recovery from acute depression occurs through CBT it involves emotional processing that reduces the reactivation of the schematic mental models that form part of dysfunctional cognitive processing configurations. In order to test for the reactivity of schematic mental models, Teasdale uses a mood induction technique to produce a depressive mood. The hypothesis would be that those who had received effective CBT would be less likely to reveal depressive schematic mental models following the mood induction, as the reactivity of the depressive schematic mental models has reduced. This hypothesis was tested by Teasdale, Segal, Williams, Ridgeway, Soulsby, and Lau. (submitted for publication) who showed that mindfulness based CBT (designed to reduce reactivity) reduced relapse rates. This study provides support for the ICS proposed mechanism of change in CBT.

Teasdale (1999) suggests that the act of attempting to deal with negative thoughts, in common with other active coping procedures may lead to the synthesis of schematic models related to taking control. These may then replace the schematic models related to themes of 'helplessness' and 'hopelessness' that otherwise maintain depression. These are interesting speculations that require further empirical testing.

Much of the support for the ICS analysis is a reinterpretation of existing empirical evidence. Although initial support has been found for some tenets of this very complex model, more research is needed to develop measures of schematic mental models; to test assumptions within the model; and to evaluate the effectiveness of CBT based on ICS. Multi-level models do propose some solutions to the inadequacies of Beck's model, however these models also create other problems as they raise hypotheses that have yet to be empirically proven. As yet there is little evidence to support either Beck's or Teasdale and Barnard's assertion that altering negative thinking and biased information processing can have an impact on higher-order schematic mental models. The final section of the review draws conclusions from the review and considers the clinical and research implications of these conclusions.

Conclusions

Empirical evidence suggests that negative-automatic thoughts change as a result of CBT for depression and that these changes are associated with reduction in depressive symptomatology. There is limited empirical research to show that cognitive processes and the contents of cognitive structures change during CBT for depression. There is no evidence that it is changes in cognitions that cause a

reduction in depressive symptomatology, there is however, the beginnings of research suggesting that cognitive change may mediate reductions in depressive symptomatology. The methodological problems associated with the definition and measurement of cognitive products, processes and structures limit the conclusions that can be drawn from these studies. Teasdale and Barnard (1993), suggest that the positive results of CBT for depression are not due to changes in specific cognitions but are due to changes in the reactivity of the depressogenic processing configuration which links cognitions and sensory information. Despite the comprehensiveness of these models and their intuitive appeal, they also require further research.

Clinical implications. The conclusions drawn from this review have a number of implications for clinical practice. Firstly, focusing on negative-automatic thoughts in CBT is associated with improved mood and as yet there is little evidence to suggest that focusing on dysfunctional assumptions and core beliefs alone will alleviate depression. Secondly, recent studies have shown that mindfulness-based CBT is effective in reducing relapse rates. Thirdly, the results of the review suggest that there are many different mechanisms underlying change in CBT and that changing cognitions may only be one of these, therefore clinicians should also be using behavioural techniques in addition to cognitive interventions.

Research implications. The review has highlighted a large number of areas where more research is required, this section will summarise these. Firstly, it is important to develop methods of assessing cognitions, in particular a method of assessing change in core beliefs. Secondly, research should begin to measure cognition at all three proposed levels in order to investigate at what level cognitions are altered during

CBT. Concurrent methodologies could be used to further define the cognitive products, processes and structures proposed to change during CBT. For example; thinking aloud, the ATQ, DAS and EBS could be used before and after treatment with CBT and pharmacotherapy. Single-case research could investigate whether changes in cognitive products has any impact on cognitive structures, by using the PQ throughout treatment and the ASQ and DAS before and after CBT designed only to target cognitive products. Thirdly, the Baron and Kenny (1986) mediational model should be employed to investigate whether cognitive change (at any level) mediates change in depressive symptomatology. Fourthly, further process research is required to investigate which aspects of CBT bring about changes in cognition and whether these changes in cognition precede distress reduction. It would be interesting to use single-case studies to investigate which aspects of CBT lead to change in cognitive products, processes and structures and which components lead to distress reduction. Multiple-baseline studies can be used to investigate the impact on cognitions when different components of CBT are introduced. CBT is effective in treating a range of difficulties (Hollon & Najavits, 1988) further process research is required to investigate the process of change in treating other clinical problems.

References

Anderson, S.M., Speilman, L.A., & Bargh, J.A. (1981). Future-event schema and certainty about the future: automaticity in depressives' future-event predictions. Journal of Personality and Social Psychology, 63, 711-723.

Barber, J.P., & De Rubeis, R.J. (1989). On second thought: where the action is in cognitive therapy. Cognitive Therapy and Research, 13, 441-457.

Barnett, P.A., & Gotlib, I.H.(1990). Cognitive vulnerability to depressive symptoms among men and women. Cognitive Therapy and Research, 14, 47-61.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 51, 1173-1182.

Bartlett, F.C.(1932). Remembering. Cambridge, UK: Cambridge University Press.

Beck, A.T. (1967). Depression: clinical, experimental and theoretical aspects. New York: Harper & Row.

Beck, A.T. (1970). Cognitive therapy: nature and relation to behavior therapy. Behavior Therapy, 1, 184-200.

Beck, A.T. (1976). Cognitive therapy and the emotional disorders. New York: International Universities Press.

Beck, A.T. (1987). Cognitive models of depression. Journal of Cognitive Psychotherapy, 1, 2-27.

Beck, A.T. (1996). Beyond beliefs, A theory of modes, personality and Psychopathology. In Salkovskis, P (Ed.) Frontiers of Cognitive Therapy (pp. 1-23). New York: Guilford.

Beck, A.T. (2000, June). Cognitive therapy with people with psychosis. Paper presented at the University of Southampton conference on developments in cognitive behavioural therapy for people with psychosis. Southampton, UK.

Beck, A.T. (in press). Cognitive aspects of personality disorders and their relation to syndromal disorders: A psychoevolutionary approach. In C.R.Cloninger (Ed.). Personality and psychopathology. Washington, D.C: American Psychiatric Press.

Beck, A.T., Freeman, A., & Associates.(1990). Cognitive therapy of personality disorders. New York: Guilford 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 (1987). Beck depression inventory scoring manual.
The Psychological Corporation. New York: Harcourt Brace Jovanovich Inc.

Bower, G.H. (1981). Mood and memory. American Psychologist, 36, 129-148.

Bradley, B.P., Mogg, K., & Lee, S.C. (1997). Attentional biases for negative information in induced and naturally occurring dysphoria. Behaviour Research and Therapy, 35, 911-927.

Brewin, C.R.(1989). Cognitive change processes in psychotherapy. Psychological Review, 96, 379-394.

Brosse, A.L., Craighead, L.W., & Craighead, W.E. (1999). Testing the mood-state hypothesis among previously depressed and never-depressed individuals. Behavior Therapy, 30, 97-115.

Burt, D.B., Zembar, M.J. & Niederehe, G. (1995). Depression and memory impairment: a meta-analysis of the association , its pattern, and specificity. Psychological Bulletin, 117, 285-305.

Chadwick, P.D.J. (1994). Examining specific cognitive change in cognitive therapy for depression: a controlled case experiment. Journal of Cognitive Psychotherapy, 8, 19-31.

Chadwick, P., Trower, P. & Dagnan, D. (1999). Measuring Negative Person Evaluations: The Evaluative Beliefs Scale. Cognitive Therapy and Research, 23, 549-559.

Clark, D.A. (1997). Twenty years of cognitive assessment: current status and future directions. Journal of Consulting and Clinical Psychology, 65, 996-1000.

Clark, D.A., & Beck, A.T. (1999). Scientific foundations of cognitive therapy for depression. New York. John Wiley & Sons.

Clark, D.A., & Steer, R.A. (1996). Empirical status of the cognitive model of anxiety and depression. In P.M. Salkovskis (Ed.), Frontiers of cognitive therapy (pp 75-96). New York. Guilford Press.

Clark, D.M. (1988). A cognitive model of panic. In S.J. Rachman & J.D. Maser (Eds), Panic: Psychological Perspectives. (pp 71-90) Hillsdale, NJ: Erlbaum.

Clarke, I. (1999). Cognitive therapy and serious mental illness: An interacting cognitive subsystems approach. Clinical Psychology and Psychotherapy, 6, 375-383.

Dobson, K.S., & Shaw, B.F. (1986). Cognitive assessment with major depressive disorders. Cognitive Therapy and Research, 10, 13-29.

Dykman, B.M. (1996). Negative self-evaluations among dysphoric college students: a difference in degree or kind? Cognitive Therapy and Research, 20, 445-464.

Ellis, A. (1962). Reason and Emotion in Psychotherapy. New York: Lyle Stuart.

Ellis, A. (1994). Reason and Emotion in psychotherapy: Revised and expanded edition. New York: Lyle Stuart.

Epstein, S. (1994). Integration of the cognitive and psychodynamic unconscious. American Psychologist, 49, 709-724.

Gloaguen, V., Cottraux, J., Cucherat, M., & Blackburn, I.M. (1998). A meta-analysis of the effects of cognitive therapy in depressed patients. Journal of Affective Disorders, 49, 59-72.

Gotlib, I.H., & McCann, C.D. (1984). Construct accessibility and depression: an examination of cognitive and affective factors. Journal of Personality and Social Psychology, 47, 427-439.

Gotlib, I.H., McLachlan, A.L., & Katz, A.N. (1988). Biases in visual attention in depressed and non-depressed individuals. Cognition and Emotion, 2, 185-200

Haaga, D.A., Dyck, M.J., & Ernst, D. (1991). Empirical status of cognitive theory of depression. Psychological Bulletin, 110, 215-236.

Hammen, C., & Krantz, S.E.(1985). Measures of psychological processes in depression. In E.E.Beckham, & W.R. Leber (Eds). Handbook of depression: treatment, assessment and research. (pp.408-444). Homewood, Il: Dorsey Press.

Hayes, A.M., Castonguay, L.G., & Goldfried, M.R. (1996). Effectiveness of targeting the vulnerability factors of depression in cognitive therapy. Journal of Consulting and Clinical Psychology, 64, 623-627.

Hedlund, S., & Rude, S.S. (1995). Evidence of latent depressive schemas in formerly depressed individuals. Journal of Abnormal Psychology, 104, 517-525

Hill, A.B., & Knowles,T.H. (1991). Depression and the ‘emotional’ Stroop effect. Personality and Individual Differences, 12, 481-485.

Hollon, S.D. (1992). Cognitive models of depression from a psychobiological perspective. Psychological Inquiry, 3, 250-253.

Hollon, S.D., Evans, M.D., & DeRubeis,R.J. (1990). Cognitive mediation of relapse prevention following treatment for depression: implications of differential risk. In R.E.Ingram, Contemporary psychological approaches to depression (pp.117-136). New York: Guilford.

Hollon, S.D., & Garber, J. (1990). Cognitive therapy for depression: a social cognitive perspective. Personality and Social Psychology Bulletin, 16, 58-73.

Hollon, S.D., Kendall, P.C., & Lumry, A. (1986). Specificity of depressotypic cognitions in clinical depression. Journal of Abnormal Psychology, 95, 52-59.

Hollon, S.D., & Kendall, P.C. (1980). Cognitive self-statements in depression: Developments of an automatic thoughts questionnaire. Cognitive Therapy and Research, 4, 383-396.

Hollon, S.D., & Kriss, P.C. (1984). Cognitive factors in clinical research and practice. Clinical Psychology Review, 4, 35-76.

Hollon, S.D., & Najavits, L. (1988). Review of empirical studies on cognitive therapy. In A.Francis & R.Hales (Eds.), Annual review of Psychiatry, Vol 7. (pp.643-666). Washington, DC: American Psychiatric Press.

Hollon, S.D., Shelton, R.C., & Loosen, P.T. (1991). Cognitive and pharmacotherapy for depression. Journal of Consulting and Clinical Psychology, 59, 88-99.

Ingram, R.E.(1990). Self-focused attention in clinical disorders: Review and a conceptual model. Psychological Bulletin, 109, 156-176.

Ingram, R.E., Miranda, J., & Segal, Z.V.(1998). Cognitive Vulnerability to Depression. New York: Guilford.

Johnson, M.H. & Magaro, P.A. (1987). Effects of mood and severity on memory processes in depression and mania. Psychological Bulletin, 101, 28-40.

Joiner, T.E., Metalsky, G.I., Lew A., & Klocek, J.(1999). Testing the causal mediation component of Beck's theory of depression: Evidence for specific mediation. Cognitive Therapy and Research, 23, 401-412.

Kwon, S.M., & Oei, T.P.S. (1994). Roles of two levels of cognition in the development: Maintenance and treatment of depression. Clinical Psychology Review, 14, 331-358.

Leventhal, H. (1985). A perceptual motor theory of emotions. In A.H. Tuma., & J.Maser (Eds.), Anxiety and the anxiety disorders (pp. 271-290). Hillsdale, N.J: Erlbaum.

Lewinsohn, P.M., Steinmetz, J.L., Larson, D.W., & Franklin, J. (1981). Depression-related cognitions: Antecedent or consequence? Journal of Abnormal Psychology, 90, 213-219.

Mandler, G. (1982). Mind and Emotion. Malabar, FL: Krieger.

Mathews, G.R., & Antes, J.R. (1992). Visual attention and depression: cognitive biases in the eye fixations of the dysphoric and the non-depressed. Cognitive Therapy and Research, 16, 359-371.

Mathews, A., & McLeod, C. (1994). Cognitive approaches to emotion and emotional disorders. Annual Review of Psychology, 45, 25-50.

McCabe, S.B., & Gotlib, I.H. (1993). Attentional processing in clinically depressed subjects: a longitudinal investigation. Cognitive Therapy and Research, 17, 359-377.

Merluzzi, T.V., & Boltwood, M.D. (1989). Cognitive Assessment. In Freeman, A., Simon, K.M., Beutler, L.E., & Arkowitz, H. (Eds.). Comprehensive handbook of cognitive therapy. (pp.249-266). London: Plenum Press.

Michenbaum, D.H. (1975). Self-instructional methods. In F.H.Kanfer & A.P.Goldstein (Eds.). Helping people change: a textbook of methods (pp. 357-91). New York: Pergamon.

Mineka, S., & Sutton, S.K. (1992). Cognitive bias and emotional disorders. Psychological Science, 3, 65-69.

Miranda, J., & Persons, J.B. (1988). Dysfunctional assumptions are mood-state dependent. Journal of Abnormal Psychology, 97, 76-79.

Miranda, J., Persons, J.B., & Byers, C.N. (1990). Endorsement of dysfunctional beliefs depends on current mood state. Journal of Abnormal Psychology, 102, 101-109.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. Psychological Review, 102, 246-268.

Nisbett, R.E. & Ross, L. (1977). Human inference: strategies and shortcomings of social judgement. Englewood Cliffs, NJ: Prentice-Hall.

Oatley, K., & Johnson-Laird, P.N. (1987). Towards a cognitive theory of emotion. Cognition and Emotion, 1, 29-50.

Oei, T.P.S., & Free, M. (1995). Do cognitive behaviour therapies validate cognitive models of mood disorders? A review of the empirical evidence. International Journal of Psychology, 30, 145-179.

Oei, T.P.S., & Shuttleworth, G.F. (1996). Specific and non-specific factors in psychotherapy: a case of cognitive therapy for depression. Clinical Psychology Review, 16, 83-103.

Oei, T.P.S., & Sullivan, L.M. (1999). Cognitive changes following recovery from depression in a group cognitive-behaviour therapy program. Australian and New Zealand Journal of Psychiatry, 33, 407-415.

Padesky, C.A. (1994). Schema change processes in cognitive therapy. Clinical Psychology and Psychotherapy, 1, 267-278.

Paykel, E.S., Scott, J., Teasdale, J.D., Johnson, A.L., Garland, A., Moore, R., Jenaway, A., Cornwall, P.L., Hayhurst, H., Abbott, R., & Pope, M. (1999). Prevention of relapse in residual depression by cognitive therapy: a controlled trial. Archives of General Psychiatry, 56, 829-835.

Persons, J.B., & Burns, D.D. (1985). Mechanisms of action in cognitive therapy: the relative contributions of technical and interpersonal interventions. Cognitive Therapy and Research, 9, 539-551.

Persons, J.B., & Miranda, J. (1992). Cognitive theories of vulnerability to depression: Reconciling negative evidence. Cognitive Therapy and Research, 16, 237-241.

Persons, J.B., & Rao, P.A. (1985). Longitudinal study of cognitions, life events, and depression in psychiatric inpatients. Journal of Abnormal Psychology, 94, 51-63.

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

Power, M.J., & Dalgliesh, T. (1999). Two routes to emotion: some implications of multi-level theories of emotion for therapeutic practice. Behavioural and Cognitive Psychotherapy, 27, 129-141.

Rush, A.J., Weissenburger, J., & Eaves, G. (1986). Do thinking patterns predict depressive symptoms? Cognitive Therapy and Research, 10, 225-236.

Schmidt, N, B., Joiner, T.E., Young, J, E., & Telch, M.J. (1995). The schema questionnaire: investigation of psychometric properties and the hierarchical structure of a measure of maladaptive schemas. Cognitive Therapy and Research, 19, 295-321.

Segal, Z.V. (1988). Appraisal of the self-schemata construct in cognitive models of depression. Psychological Bulletin, 103, 147-162.

Segal, Z.V., & Gemar, M. (1997). Changes in organisation for negative self-referent material following cognitive-behavioural therapy for depression: a primed Stroop task. Cognition and Emotion, 11, 501-516.

Segal, Z.V., Gemar, M., & Williams, S. (1999). Differential cognitive effects to a mood challenge following response to either cognitive therapy or pharmacotherapy for unipolar depression. Journal of Abnormal Psychology, 108, 3-10.

Segal, Z.V., Lau, M.A., & Rokke, P.D. (1999). Cognition and emotion research and the practice of cognitive-behavioural therapy. In T.Dalgleish &

M.Power. (Eds.), Handbook of Cognition and Emotion. (pp.705-726). Chichester: Wiley.

Segal, Z.V., & Swallow, S.R. (1994). Cognitive assessment of unipolar depression: measuring products, processes and structures. Behaviour Research and Therapy, 32, 147-158

Seligman, M.E.P., Abramson, L.Y., Semmel, A., & von Baeyer, C. (1979). Depressive attributional style. Journal of Abnormal Psychology, 88, 242-247.

Silverman, J.S., Silverman, J.A., & Eardley, D.A. (1984). Do maladaptive attitudes cause depression? Archives of General Psychiatry, 41, 28-30.

Simons, A.D., Murphy, G.E., Levine, J.L., & Wetzel, R.D. (1986). Cognitive therapy and pharmacotherapy for depression: Sustained improvement over one year. Archives of General Psychiatry, 43, 43-48.

Taylor, E. & Crocker, P. (1981). Schematic basis of social information processing. In E.T. Higgins, C.P.Herman, & M.P.Zanna (Eds.). Social cognition: The Ontario Symposium. (pp. 45-56) Vol.1.Hillsdale, N.J.: Lawrence Erlbaum.

Teasdale, J.D. (1997). Clinically Relevant Theory: Integrating Clinical Insight with Cognitive Science. In P.M. Salkovskis (Ed.), Frontiers of Cognitive Therapy. (pp.26-47).New York: Guilford.

Teasdale, J.D. (1999). Emotional processing, three modes of mind and the prevention of relapse in depression. Behaviour Research and Therapy, 37, S53-S77.

Teasdale, J., & Barnard, P. (1993). Affect, Cognition and Change. Hove: Erlbaum.

Teasdale, J.D., & Fennell, M.J.V. (1982). Immediate effects on depression of cognitive therapy interventions. Cognitive Therapy and Research, 16, 343-352,

Teasdale, J.D., & Fogarty, S.J.(1979). Differential effects of induced mood on retrieval of pleasant and unpleasant events from episode memory. Journal of Abnormal Psychology, 88, 248-257.

Teasdale, J.D., Lloyd, C.A., & Hutton, J.M. (1998). Depressive thinking and dysfunctional schematic mental models. British Journal of Clinical Psychology, 37, 247-257.

Teasdale, J.D., & Rezin, V. (1978).The effects of reducing frequency of negative thoughts on the mood of depressed patients-tests of a cognitive model of depression. British Journal of Social and Clinical Psychology, 17, 65-74.

Teasdale, J.D., Segal, Z.V.,& Williams, J.M.G.(1995). How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? Behaviour Research and Therapy, 33, 25-39.

Teasdale, J.D., Segal, Z.V., Williams, J.M.G., Ridgeway, V.A., Soulsby, J.M., & Lau, M.A.(submitted for publication). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy.

Teasdale, J.D., & Taylor, R. (1981). Induced mood and accessibility of memories: an effect of mood state or induction procedure. British Journal of Clinical Psychology, 20, 39-48.

Velten, E. (1968). A laboratory task for induction of mood states. Behaviour Research and Therapy, 6, 473-482.

Weissman, A., & Beck, A.T. (1978). The development and validation of the Dysfunctional Attitude Scale. Paper presented at the annual meeting of the American Educational Research Association, Toronto.

Williams, J.M.G., Healy, D., Teasdale, J.D., White, W., & Paykel, E.S. (1990). Dysfunctional attitudes and vulnerability to persistent depression. Psychological Medicine, 20, 375-381.

Williams, J.M.G., & Nulty, D.D. (1986). Construct accessibility, depression and the emotional stroop task: transient mood or stable structure? Personality and Individual Differences, 7, 485-491.

Williams, J.M.G., Teasdale, J.D., Segal, Z.V., & Soulsby, J. (2000). Mindfulness-based cognitive therapy reduces overgeneral autobiographical memory in formerly depressed patients. Journal of Abnormal Psychology, 109, 150-155.

Williams, J.M.G., Watts, F.N., Macleod, C., & Mathews, A. (1997). Cognitive Psychology and Emotional Disorders.(2nd ed.). Chichester: Wiley.

Wilson, G.T., Goldin, J.C., & Charbonneau-Powis, M. (1983). Comparative efficacy of behavioural and cognitive treatment of depression. Cognitive Therapy and Research, 7, 111-124

Young, J.E. (1994). Cognitive Therapy for personality disorders: A schema focused approach (2nd ed.). Sarasota, FL Professional Resource Press.

Young, J.E., & Brown, G. (1994). Young schema questionnaire (2nd ed.) In J.E.Young, Cognitive Therapy for personality disorders: A schema focused approach (Rev. ed.) (pp. 63-76). Sarasota, FL: Professional Resource Press.

Zigmond, A.S., & Snaith, R.P. (1983). The Hospital Anxiety and Depression Scale. Acta Psychiatrica Scandinavica 67, 361-70.

Empirical Paper

Belief change in cognitive-behavioural therapy for auditory hallucinations

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Belief change in cognitive-behavioural therapy for auditory hallucinations

Abstract

This single-case multiple-baseline design study investigated the impact of three components of cognitive-behavioural therapy (CBT) proposed to be the active factors in CBT for psychosis, on negative self-evaluative beliefs, delusional beliefs and distress levels. Four individuals with a diagnosis of schizophrenia (DSM IV; American Psychiatric Association, 1994) and treatment resistant, subjectively distressing voices participated. Three components of CBT were introduced sequentially following an extended baseline: case formulation, cognitive restructuring of negative self-evaluative beliefs and cognitive restructuring of delusional beliefs about voices. The study also explored the relationship between the two target beliefs.

Formulation had little or no impact on belief conviction or levels of distress. For all participants there was a significant positive correlation between the two beliefs.

Belief change in cognitive behavioural therapy for auditory hallucinations

Cognitive-behavioural therapy (CBT) for psychosis is now a well established treatment for people with psychosis. A recent Cochrane Review (Jones, Cormac, Mota, & Campbell, 1999) concluded that CBT was an effective treatment for psychosis. In addition, The National Service Framework for mental health (Department of Health, 1999) states that there is growing evidence of effectiveness for psychological therapies, including cognitive approaches for schizophrenia.

Two large randomised controlled trials have been conducted to evaluate the effectiveness of CBT for psychosis (Sensky, Turkington, Kingdon, Scott, Scott, Siddle, O'Carroll, & Barnes, 2000; Tarrrier, Wittkowski, Kinney, McCarthy, Morris, & Humphreys, 1999). These two trials compared CBT for psychosis with a non-cognitive befriending/supportive counselling intervention and routine care. In both trials, at the end of intervention participants in both the CBT and the befriending/counselling groups showed a reduction in positive symptoms and distress when compared to the routine care group. There was no significant difference between outcome for the CBT group and the befriending/counselling group. In the Sensky et al. (2000) study it was only at nine-month follow-up that there was any significant difference between the two groups. At follow-up those in the CBT group continued to improve whereas those in the befriending/counselling group were more likely to relapse. The Tarrrier et al. (1999) trial showed no significant difference between the two interventions at one year follow-up.

These trials suggest that CBT is an effective treatment for psychosis. However, the fact that befriending/counselling can be as effective as CBT raises a

number of questions. How does CBT for psychosis actually work and what are the components of an effective treatment for psychosis?

A number of treatment manuals have been written for CBT for psychosis (Fowler, Garety, & Kuipers, 1995; Chadwick, Trower, & Birchwood, 1996). The shared components of each treatment are: a good therapeutic relationship, the development of a shared formulation of the client's problems, restructuring beliefs about positive symptoms (delusional beliefs and beliefs about voices, secondary delusions) and restructuring negative self-evaluative beliefs. Negative self-evaluations are defined as; stable, global, and total condemnations of the entire person (Trower, Casey, & Dryden, 1988) and are thought to be closely associated with emotional disturbance (Chadwick et al., 1996). It is generally agreed that in CBT the therapeutic alliance is a necessary, but not sufficient factor for change (Power & Brewin, 1997). The three remaining factors are said to be the active ones in facilitating change in delusions (Fowler, Garety, & Kuipers, 1998). There is no empirical research component analysing these three aspects of CBT for psychosis: formulation, cognitive restructuring of delusional beliefs, and restructuring of negative self-evaluative beliefs. Also, the two randomised-controlled trials mentioned above, do not assess impact of CBT on the person's own negative self-evaluations or unconditional schema.

The present study begins an investigation of the impact of these three components of CBT for psychosis on conviction in delusional and negative-self evaluative beliefs (see Chadwick & Trower, 1996). The study uses a single-case multiple-baseline design across four individuals with drug resistant auditory hallucinations and evaluates the impact of the introduction of three sequential interventions on negative self-evaluative beliefs and delusional beliefs about the

power and meaning of the voices. The three components of CBT to be investigated are: collaborative formulation, cognitive restructuring of negative self-evaluative beliefs and cognitive restructuring of delusions about power and meaning of the voices. The impact of the three components of CBT on mood and symptomatology is also explored.

The study addresses four questions about the process of change in CBT for psychosis. The primary research questions are: first, does a written and shared formulation in and of itself impact on conviction in beliefs about voices (secondary delusions) or negative self-evaluative beliefs. Second, does formulation in and of itself impact on levels of distress. The third and fourth aims of the study are to examine the relationship between negative self-evaluative beliefs and delusions as this remains an area of theoretical debate. Using the distinction between inferential beliefs (an assertion of fact that may be true or false) and evaluations (good-bad judgements) (Ellis, 1962). Chadwick et al. (1996) suggest that delusions, even bizarre ones, are inferential beliefs about how the world actually is, and they assert that where delusions are associated with strong emotion it is probable that there is a core negative self-evaluative belief embedded in the delusional belief. That is, distressing delusions are inferences linked with core negative self-evaluative beliefs. Based on this cognitive model of delusions we would expect to find that negative self-evaluative beliefs and delusions co-vary over time. Therefore the third aim of the study is to further investigate this hypothesis by monitoring the relationship between the beliefs over the course of therapy. One test of this is to assess the correlation between conviction scores in the two beliefs, a positive correlation would fit with the idea that the two beliefs co-vary. Linked to this, the fourth aim is to

investigate whether when negative self-evaluative beliefs are restructured there is a generalised effect to delusions.

Method

Design

An across subjects multiple-baseline design was employed (n=4). Following a minimum of 5 baseline data points, three sequential interventions were introduced at intervals of at least four sessions. These were; case formulation, cognitive restructuring of negative self-evaluative beliefs, and cognitive restructuring of beliefs about the power and meaning of the voices (secondary delusions).

The essential feature of a multiple-baseline design is to demonstrate that behaviour changes when and only when the intervention is applied. The different baselines serve as control conditions, to evaluate the change that would have been expected had the treatment not been introduced (Kazdin, 1982).

Participants

Two men and two women participated. All were referrals to the Psychosis service at the Royal South Hampshire Hospital, Southampton.

All participants fulfilled the following criteria for entry to the study:

1. drug resistant auditory-hallucinations, which were subjectively distressing and had been present for at least six months.
2. DSM-IV criteria for schizophrenia (American Psychiatric Association, 1994) .
3. consented to take part in the study (see Appendix II).
4. no evidence of organic psychosis and no primary diagnosis of substance abuse or learning disabilities.

Participant 1. Brad¹, was a 20 year old, single man, who was an informal inpatient on a secure ward. Brad was in hospital due to his high level of distress, suicide attempts and self-harm, which he attributed to his auditory-hallucinations. Brad first heard second-person auditory-hallucinations two years ago. At the time of assessment, Brad heard two unknown male voices. The voices told him he was ‘rubbish, bad and should kill himself’. In response to these commands Brad had attempted suicide three times. He stated that he did not want to die but that he was acting in response to the voices. Brad also described strong paranoid beliefs that he would be attacked if he left the ward.

The content of the voices reminded him of things his father would have said e.g. ‘you are stupid, a waste of space’. As a child, Brad had suffered physical abuse from his father between the ages of 5 and 10. At assessment Brad’s Hospital Anxiety and Depression Scale score (HADS; Zigmond & Snaith, 1983) indicated he was experiencing severe depressive symptomatology and moderate anxiety symptoms. His Beliefs About Voices Questionnaire scores (BAVQ-R; Chadwick, Lees, & Birchwood, 2000) indicated that he believed his voices to be totally omnipotent (18), malevolent (18) and not at all benevolent (0). He experienced primarily negative affect as a result of the voices (12) and little positive affect (3). His primary method of coping with the voices was resistance (15), however he also coped by engaging with the voices (12).

Participant 2. Damien was a 50 year old, single man who lived in a 24 hour supported hostel, due to his high level of suicide risk. Damien had experienced second-person command auditory- hallucinations, visual hallucinations and

¹ all names and details have been changed to maintain confidentiality.

persecutory thoughts for seven years, following the death of his father. Damien heard two male voices whom he identified as his uncle and father who had sexually abused him between the ages of 5 and 13.

The content of the voices consisted of comments such as ‘you are bad, you deserve to die, it was your fault’ and commands to self-harm ‘cut up, cut up’ and to commit suicide ‘go jump under that car, just kill yourself’. In the past Damien had followed the commands, this had led to a number of suicide attempts and self-harm. At assessment Damien’s HADS scores indicated he was experiencing moderate anxiety symptoms and was asymptomatic for depression. His BAVQ-R scores indicated that he believed his voices to be omnipotent (15), malevolent (15) and not at all benevolent (0). He experienced primarily negative affect as a result of the voices (9) and little positive affect (3). His primary method of coping with the voices was resistance (12), he did not engage with the voices (0).

Participant 3. Kate was a 56 year old woman who lived in a rest home. Kate had experienced second-person command auditory-hallucinations, visual hallucinations and persecutory thoughts for eight months following a period of depression.

Kate heard two voices that she identified as being two unfamiliar men. Kate stated that the content of the voices reminded her of comments her ex-husband would have made. Her ex-husband had physically and sexually abused her, physically abused her children and sexually abused one of her children.

The voices commanded her ‘kill yourself’, ‘she is wicked’ ‘she deserves to die’ and provided instructions on how she should do it ‘go and get some tablets’. As a result she had attempted suicide on one occasion and was fearful of leaving her

home lest she follow their instructions. At assessment Kate's HADS scores indicated she was experiencing severe anxiety and depression symptoms. Her BAVQ-R scores indicated that she believed her voices to be omnipotent (6), malevolent (9) and not at all benevolent (0). She experienced only negative affect as a result of the voices (9), positive affect (0). Her primary method of coping with the voices was resistance (12), she did not engage with the voices (0).

Participant 4. Rebecca was a 36 year old single woman who was an inpatient on a secure ward. Rebecca was on section due to her high level of suicide risk. Rebecca had experienced second and third person auditory-hallucinations for five years at assessment. She also experienced visual hallucinations. Rebecca heard two voices, one male and one female who constantly argued. She did not recognise the voices but the content of the voices reminded her of things her step-father and uncle would have said. These two men were the perpetrators of the sexual abuse she suffered between the ages of 6 and 16.

The content of the voices was always distressing and commanded her to kill herself. They also told her she was a bad person and worthless. Rebecca had attempted to kill herself on a number of occasions in the past and had self-harmed in response to the voices. At assessment Rebecca's HADS scores indicated she was experiencing severe anxiety and depression symptoms. Her BAVQ-R scores indicated that she believed her voices to be omnipotent (13), malevolent (12) and not at all benevolent (0). She experienced only negative affect as a result of the voices (12), positive affect (0). Her primary method of coping with the voices was resistance (12), she did not engage with the voices (0).

Measures

Belief conviction ratings. During an initial assessment phase, the two target beliefs: a negative self-evaluative belief and a secondary delusion about the voices (omnipotence and the meaning of the voices) were identified using Socratic questioning (Beck, Rush, Shaw, & Emery, 1979) and inference chaining (the downward arrow technique).

Individuals indicated their conviction by marking a 10cm visual analogue line, anchored at either end as 0% or 100%. For example, the negative self-evaluative belief, 'I am bad' the line was anchored on the left '0% = Not at all true' and the right '100% = Totally true'.

Belief ratings were completed at the end of every session (see Appendix III).

Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983).

Symptoms of anxiety and depression were monitored using the HADS. The HADS is a 14 item self-administered rating scale of depressive (7 items) and anxious (7 items) symptomatology. Like all such self-report measures the HADS is not diagnostic, however it does provide indications of the severity symptomatology. Scores of 0-7= non case, 8-10=mild symptomatology, 11-14 = moderate symptomatology and 15-21= severe symptomatology.

The HADS was completed at assessment, and at the end of the baseline, formulation and two cognitive therapy interventions.

Auditory-hallucinations Rating Scale (PSYRATS; Haddock, McCarron, Tarrier, & Faragher, 1999). The PSYRATS scale is a self-report scale with proven reliability and validity, which measures: emotional content, physical characteristics and

cognitive interpretations of auditory-hallucinations. A reduction in score indicates an improvement in the experience of auditory-hallucinations.

The PSYRATS was completed at assessment, and at the end of the baseline, formulation and two cognitive therapy interventions.

Procedure

Treatment reliability. CBT for psychosis was conducted (Chadwick et al., 1996). This is adapted from the work of Beck (1967) and Ellis (1962) and full details on how to conduct this therapy is contained in (Chadwick et al., 1996). Each cognitive therapy session followed a fixed structure, with agenda setting, review of homework, exploration of issues in order of priority and assignment of new homework. Weekly 90 minute supervision was provided by Dr Paul Chadwick to ensure adherence to the therapy protocol and design. In addition therapist competence and adherence to the treatment protocol was assessed. Sessions were audio-taped and rated on the cognitive therapy rating scale (Young & Beck, 1980) by an independent rater (Clinical Psychologist, with diploma in CBT) to ensure fidelity and competency. The mean score was 5 with no rating below 3, indicating that the therapist was competent at cognitive therapy.

Intervention

Phase 1: Assessment. At the initial assessment appointment the researcher explained the study and each participant completed a consent form. Each participant was then asked to complete the HADS, PSYRATS and BAVQ-R. In addition the researcher drew out the two target beliefs, a negative self-evaluative belief, and a belief about the power and meaning of the voices (delusional belief). The

participants were then asked to rate these two beliefs on the belief conviction scales. These assessments were completed over 2/3 interviews.

Phase 2: Baseline. During the baseline phase, the researcher met twice weekly with each participant and worked on developing a therapeutic relationship. In addition, as much information as possible was accumulated about the beliefs and the evidence (both past and present) that helped to establish and maintain the beliefs.

During the baseline none of the following occurred:

1. Sharing of the CBT model.
2. Disputing beliefs.
3. Behavioural experiments.
4. Homework.

Phase 3: Case formulation. The case formulation phase of the intervention involved the participant and researcher collaborating to develop a shared understanding of the participants current difficulties and linking these difficulties to the participants past experiences. The formulation followed a strict format. An individualised formulation diagram and letter were presented to each participant, all of which followed an identical format. The formulation diagram (see Appendix IV) contained a standard CBT formulation, this consisted of a diagram of the maintenance of the current problem (links between thoughts, feelings, behaviour and physical signs, Greenberger & Padesky, 1995); triggers to the current problem (either internal or external); onset of the problem (critical incidents); rules for living (dysfunctional assumptions and behaviour arising from core beliefs); core beliefs

(about the self, others, world and future); and formative experiences (pertinent childhood and early adulthood experiences).

The accompanying letters were descriptions in ordinary words of the diagrammatic case formulation, with only four extras; an explanation of the targets for therapy, linking the content of the voices and traumatic life events, raising the possibility that the voices may originate from the person's own mind perhaps in a post-traumatic way and a description of possible impact of beliefs on the therapeutic alliance.

Each formulation diagram and letter was checked over by Dr Paul Chadwick before being presented to the participant. The formulation diagram and letter were given in the first two sessions and discussion of these continued for the next two sessions.

Phase 4: Cognitive restructuring of negative self-evaluative beliefs.(NSEB)

The cognitive restructuring aspect of cognitive therapy for voices was directed at the negative self-evaluative belief first and then subsequently to the beliefs about the power and meaning of the voices.

CBT for the negative self-evaluative belief consisted of:

1. Using Socratic dialogue, or guided discovery to explore and weaken the beliefs.
2. Generating an alternative positive self-schema (Padesky, 1994) and collating evidence for the alternative self-schema.
3. Rehearsing the use of the positive self-schema (e.g. two-chair exercises).
4. Using positive schema recall techniques (cue cards, tape recording of positive data).

Phase 5: Cognitive restructuring of beliefs about the power and meaning of the voices (delusional beliefs). Intervention three focused on restructuring beliefs about the voices' power and meaning (secondary delusions).

CBT for the secondary delusion included:

1. Providing alternative psychological explanations for auditory hallucinations. E.g. the meaning of the voice was explored by introducing the idea that voices might originate from the mind, perhaps as a post-traumatic reaction being similar to intrusive thoughts.
2. Discussion of the advantages and disadvantages of two possible views -the voices as internally generated, or as coming from someone else.
3. Using Socratic dialogue, or guided discovery to explore and weaken the beliefs about the power and meaning of the voices.
4. Behavioural experiments, e.g. teaching a participant to try and increase voice activity to test the belief about control and introducing additional coping strategies.

Phase 6: Independent assessment. Within 1 week of completion of Phase 5, all participants met with an independent clinician to discuss their experience of the therapy. Specific prompts were used to draw out what individuals had found most helpful about the therapy. Individuals were assured that their responses were anonymous and were encouraged to be honest as this would benefit voice hearers receiving therapy in the future. Also, ongoing reports from health care professionals and relatives were noted to provide a further perspective on participants' progress in cognitive therapy.

Phase 7: Follow-up (1 month). To assess for maintenance of change, a one-month follow-up assessment was conducted. This consisted of Belief ratings, HADS and PSYRATS.

Data analysis

Given the single-case experimental, multiple-baseline design, graphical representation was the primary form of data analysis (Morley, 1996). To explore the relationship between delusional beliefs and negative self-evaluative beliefs, Spearman's correlation coefficients were calculated. Non-parametric analysis was chosen due to the distribution of scores.

Results

Belief Conviction

The first aim of the study was to explore whether formulation in and of itself has any impact on NSEB and delusional beliefs (beliefs about voices). Figure 1 shows belief conviction ratings at each session during baseline, formulation, cognitive restructuring for negative self-evaluative belief and cognitive restructuring for power and meaning and at one month follow-up.

Insert Figure 1 here

Phase 2: Impact of Formulation on belief conviction.

Brad's baseline NSEB scores ranged between 50 and 100%. During the formulation phase, NSEB stabilised at 50%. At the first two formulation sessions, his scores were both 50%; at the final two formulation scores were 80 and 100%.

Damien's formulation phase NSEB remained within the baseline range of between 40-90%. His delusional belief also remained within the baseline range of between 40-90% during formulation. Kate's baseline NSEB and delusional belief ranged between 50-100%, this did not change during the formulation phase. Rebecca's NSEB conviction was constant at 100% throughout baseline and formulation. Her delusional belief conviction ranged between 80 and 90% during baseline and remained at 80% during the formulation phase.

In summary, for seven of the eight beliefs, scores during formulation were no lower than during baseline, indicating that the formulation phase of treatment did not reduce belief conviction. For Brad's delusional belief, formulation lead to a reduction in the first two conviction scores, however the last conviction score rose to 100%

Phase 3: Cognitive restructuring of negative self-evaluative beliefs. For all participants it was only during intervention one, cognitive restructuring of negative self-evaluative beliefs, that NSEB conviction reduced. For all, this reduction was maintained at one-month follow-up.

Brad's conviction that he was between 50-100% 'rubbish and bad' fell to 10% and then again to 0%. His conviction rose to 30% at the start of the next treatment phase but then fell again to 0% and this reduction was maintained at one month follow-up. His delusional belief conviction also fell during this phase, from between 60-100% to between 10-100%.

Damien's conviction that he was between 70-80% 'bad' fell to between 0-25% during cognitive restructuring of NSEB. His belief fluctuated between 0-25% in the next phase of treatment and then was maintained at 0% at one-month follow-up. His delusional belief conviction did not change during this phase of treatment and remained within the baseline range.

Kate's NSEB conviction that she was 85-90% 'wicked' fell to 0%, this conviction rating was maintained throughout the next phase of treatment and at one-month follow-up. There was no change in her delusional belief conviction during this phase of treatment, it remained within the baseline range.

Rebecca's NSEB conviction that she was 100% 'bad' fell to 90% and continued to fall steadily during the next treatment phase to between 60-70%. This reduction was maintained at follow-up. Her delusional conviction rating also changed during the NSEB phase of treatment. It fell slightly from between 80-90% during baseline and formulation to between 75-85%.

For all participants NSEB conviction fell for the first time during cognitive restructuring of negative self-evaluative beliefs. For Brad and Rebecca, as NSEB conviction fell, so delusional belief conviction fell. For Damien and Kate, there was no change in delusional belief conviction during this phase. For all participants reduction in NSEB was maintained at follow-up.

Phase 4: Cognitive restructuring of delusional beliefs. Brad's delusional belief conviction began to fall during the NSEB restructuring treatment phase. During cognitive restructuring of delusional beliefs his conviction continued to fall to between 0-40%. This reduction was maintained at follow-up. Damien's baseline delusional belief conviction had been between 50-90% and during the final phase of therapy his conviction was between 0-50%. This was maintained at follow-up. Kate's delusional conviction did not change until this phase of treatment, during which it fell from between 50-95% to 0%. It stabilised at 0% and this was maintained at one-month follow-up. Rebecca's delusional belief had started to fall during the NSEB restructuring treatment phase and continued to fall from between 80-85% to between 40-50% during the delusional restructuring phase and this reduction was maintained at follow-up.

For Damien and Kate, delusional beliefs did not reduce until cognitive restructuring of delusional beliefs. For Brad and Rebecca delusional belief conviction continued to fall during this phase of treatment. For all participants reduction in belief conviction was maintained at one-month follow-up.

Summary of impact on belief conviction. There was no reduction in conviction scores for seven of the eight beliefs during formulation. For all participants it was the cognitive restructuring phases of treatment that had most impact on belief conviction. In relation to the fourth aim of the study for two of the four participants there did appear to be a generalisation effect.

Levels of distress

The second aim was to explore whether formulation alone has an impact on distress (symptoms of auditory-hallucinations and mood). Table 1 shows mood and auditory-hallucinations symptoms as measured by the HADS and PSYRATS at assessment, baseline, end of formulation, end of NSEB restructuring, end of delusional belief restructuring and at follow-up.

 Insert Table 1 about here

Hallucinations ratings scale (PSYRATS). A reduction in score indicates an improvement in the experience of hearing auditory hallucinations. From pre- to post-treatment, two participants Brad and Kate, show at least a 50% reduction in score, for Rebecca there is a 22% reduction and for Damien an 11% reduction. For all participants, there is a gradual decrease in scores, suggesting that all phases of treatment are equally effective in reducing symptoms of auditory hallucinations.

Hospital Anxiety and Depression scale (HADS). Although, anxiety and depression scores may have reduced for some individuals during the baseline phase, for all participants no sustained reduction in distress occurred during the formulation phase of treatment.

Anxiety. Brad's anxiety scores reduced from severe anxiety at assessment to moderate anxiety scores at the end of treatment. At follow-up his anxiety scores were asymptomatic. Damien's scores fluctuated between the upper-end of mild, to the

lower-end of moderate throughout the study. Kate's anxiety fell steadily over the course of the study from the severe range to the mild range of anxiety at the end of treatment. Rebecca's anxiety levels briefly fell to within the moderate range, but rose again to severe and were then unchanged to follow-up.

Depression. Brad's depressive symptomatology was severe at assessment, it reduced to within the mild range during baseline and rose to moderate range at the end of formulation. His scores then stabilised to within the non-case range following restructuring of NSEB. Damien's depressive symptomatology was asymptomatic during assessment and baseline. During formulation it rose to moderate but then fell to asymptomatic at the end of restructuring of NSEB and remained asymptomatic at follow-up. Kate's severe depressive symptomatology fell to mild at the end of baseline and then rose to moderate at the end of formulation. Her symptomatology then fell to asymptomatic at the end of NSEB and this reduction was maintained at follow-up. Rebecca's severe depressive symptomatology fell to moderate at the end of formulation, it then rose to severe at the end of NSEB and then stabilised at severe to follow-up.

Summary of impact on mood and symptomatology. There was no consistent effect of therapy on distress levels across participants. Over the course of the study, Kate showed an improvement in anxiety and depressive symptomatology and Brad showed an improvement in depressive symptomatology. Otherwise there was no affective improvement from assessment to the end of treatment. There was, however, a gradual decrease in symptomatology over the course of the intervention,

suggesting that all phases of treatment were equally effective in reducing symptomatology.

Formulation in and of itself had no sustained impact on levels of distress as measured by the HADS and PSYRATS.

What is the relationship between negative self-evaluative beliefs and delusions?

The third aim of the study was to explore the relationship between the two target beliefs. This was in order to further explore the Chadwick et al. (1996) cognitive model of delusional beliefs that hypothesises that there will be a positive relationship between negative self-evaluative beliefs and delusional beliefs over time.

A Spearman's correlational analysis was conducted on the two beliefs for each individual over the course of the intervention to investigate the relationship between negative self-evaluative beliefs and beliefs about voices (secondary delusions). Given that the data was not normally distributed we used a non-parametric, one tailed, Spearman's correlational analysis.

For Brad, $r_s = .76$ and $p < 0.001$, For Damien, $r_s = .36$ and $p < .05$, For Kate, $r_s = .39$ and $p < .05$ and for Rebecca, $r_s = .61$ and $p < 0.001$. For all participants there was a significant positive relationship between the negative-self evaluative belief and delusional beliefs. These results appear to support the cognitive model of delusions proposed by Chadwick et al. (1996).

Validation of treatment effects

For all participants changes were validated with on-going comments from health care professionals and family members. In addition an independent clinician met with each participants and using a semi-structured interview asked them about their current mood, experience of the voice and view of therapy.

Brad's Psychiatrist reported that his frequency of self-harm behaviour had reduced to twice a month at the end of intervention. At the start of therapy the frequency had been several times a week. In addition, he had been on a number of home visits and at the end of the intervention he was discharged and moved home. Brad reported to the independent assessor that he no longer felt depressed or anxious and that he 'felt much better in himself'. He said that he could cope with the voices and understood that 'they are not there really'.

Damien's Community Psychiatric Nurse commented that Damien had made noticeable improvement in his ability to manage his voices and in his self-esteem. As a result she consulted with his Psychiatrist and reduced his medication. A new Senior Registrar who met with Damien at the end of his therapy sessions noted that 'Damien is doing very well, he complained about hearing the voices, but feels much more in control of them now. Objectively, Damien is very stable, co-operative and friendly, his mood is euthymic'. The hostel staff confirmed that Damien had increased his activities outside the hostel. Damien reported to the independent assessor that he felt better than several months ago and felt that there had been a big improvement in his mood. He said that the voices were not too bad, and were a lot better than previously. He said that sometimes he could cope with them quite well. He said that he felt more confident and that 'therefore the voices are less powerful'.

He said that the key to the success of therapy was his good relationship with the therapist.

Kate's Psychiatrist, a Professor of Psychiatry commented that Kate had 'benefited greatly from the therapy' and had reported 'feeling fine' as she was now 'able to cope with the voices'. Kate's daughter reported that she was now able to travel independently on public transport and had started to attend a day centre. Kate reported to the independent assessor that she felt she was 'coming on leaps and bounds' and that her mood was a lot better. She said that the voices still come and go but are less powerful now. She said she felt she was much better able to cope with them and that they did not get her down so much. She commented that the therapy 'helped me understand I'm not a wicked person, and that I am a nice person'. She said it helped her to stop believing everything the voices told her.

Rebecca's Consultant Psychiatrist noted that she had improved in her ability to cope with the voices and that these were no longer her primary difficulty. He also commented that she was now much more willing to share her feelings with staff and seek support from her family. Rebecca reported to the independent assessor that her mood was 'up and down'. She said the voices were 'not too bad, I'm able to control them a lot more and it feels good to have control over the voices'. She commented that therapy helped her to acknowledge the fact that she is not a bad person despite the fact that she had always believed she was bad. She said she was beginning to feel better in herself and that she no longer felt responsible for bad things happening.

Discussion

The first aim of the study was to investigate the impact of formulation on conviction in negative self-evaluative beliefs and delusions. The results of this study show that the introduction of a shared formulation had no impact on conviction in seven of the eight beliefs. For one individual, formulation had a short-term impact on delusional belief conviction.

The second aim of the study was to investigate the impact of formulation on levels of distress (mood and symptomatology). Over the course of the intervention, for Brad and Kate there was evidence of an improvement in mood, however for Damien and Rebecca there was no evidence of a reduction in distress. Similarly for Brad and Kate there was evidence of 50% reduction in their auditory hallucination symptomatology whereas for Rebecca there was a 22% reduction and for Damien a 11% reduction in symptomatology. Overall, there was no indication that any one component of therapy differentially improved distress.

These findings suggest that formulation in and of itself does not reduce conviction in negative self-evaluative beliefs, delusional beliefs, or distress and that it is only cognitive restructuring that has an impact on beliefs. It would be wrong however to conclude from this that case formulation is without value. It is possible that shared case formulation enhances outcome in CBT even though it may have no impact on beliefs in and of itself. There are many other possible benefits. These include: improving the therapeutic alliance, providing the client with a rationale for treatment and ensuring good clinical practice (Persons, 1989). However, pending a programme of empirical research the value of a shared case formulation in CBT for psychosis remains unknown.

The third aim of the study was to explore the relationship between delusional and negative self-evaluative beliefs over the course of therapy. The results of the correlation indicated that there was a positive relationship between the two beliefs. Inspection of the graphical data showed that for Brad and Rebecca, when conviction in negative self-evaluative belief fell, so too did conviction in delusional beliefs. In contrast, as conviction in negative self-evaluative beliefs fell for Kate and Damien there was no change in delusional belief conviction. Clearly, the relationship between the two beliefs is not straightforward.

Taken together, these results have a number of possible explanations. A positive correlation between the beliefs provides some support for the Chadwick et al. (1996) covariance model of delusional belief maintenance. The generalisation for two people where a reduction in negative self-evaluative belief led spontaneously to a reduction in delusional belief could be interpreted as providing support for the Zigler and Glick (1988) and Bentall, Kinderman and Kaney (1994) proposal that delusional beliefs protect against low self-esteem. It could be argued that those whose negative self-evaluative beliefs reduced no longer required strong delusional beliefs and therefore their delusions also fell away. An alternative explanation for the generalisation effect for two people is that it is due to the development of skills in challenging beliefs. As participants began to challenge one belief they also become proficient in challenging the other.

The conclusions that can be drawn about the relationship between the beliefs are limited by the fact that negative-self evaluative beliefs were targeted prior to delusional beliefs therefore further research should investigate whether a positive relationship remains between the beliefs if delusional beliefs are targeted first.

The limited reduction in distress and larger reduction in symptomatology is in accordance with a number of other studies of CBT for auditory hallucination, which have also found that while symptomatology improves, distress levels do not change significantly (Chadwick, Sambrooke, Rasch, & Davies, 2000; Wykes, Parr, & Landau, 1999). Within this study those individuals who showed greatest distress reduction also showed greatest reduction in both negative self-evaluative and delusional belief conviction. This suggests that a reduction in belief conviction is associated with reduced distress.

In addition, the two individuals who showed least change in either belief conviction or distress levels were those with the most long-standing difficulties both in terms of hearing voices and duration of prior trauma. The study would have been improved if the sample had been more closely matched in terms of length of time hearing voices. This may have improved the generalisations that could have been made on the basis of possibly more consistent results. Further research could consider comparing interventions for recent onset and chronic voice hearers.

In all cases, reduction of conviction in negative self-evaluative beliefs and beliefs about voices and reductions in distress were maintained at one month follow-up. These results are in accordance with a large body of research that has shown that CBT is an effective treatment for people with psychosis (Sensky et al., 2000; Tarrier et al., 1998), brings about cognitive change (Segal, Gemar, & Williams, 1999) and that change is sustained at one month follow-up (Gloaguen, Cottraux, Cucherat, & Blackburn, 1998).

A number of methodological criticisms can be made of the study. Firstly, concerning the measures used. The PSYRATS was used to measure ongoing change in the experience of hearing voice. For all participants there was evidence of change

on this measure, however it was difficult to evaluate this change as there is no indication when using the measure of what indicates clinically significant change. As shown within the baseline phase, there is an ongoing fluctuation in the experience of hearing voices, and small reductions in the PSYRATS scores may simply reflect this. Further process research would benefit from using a more sensitive measure of symptomatology. The use of self-report could be criticised due to the risk of demand characteristics. However, this study attempted to avoid these criticisms by using two methods of independent corroboration, comments on behavioural change from healthcare staff and an independent assessment at the end of treatment. The evidence that beliefs had changed was supported by the behavioural data provided by medical staff, family members and the participants themselves. Further research, however, would benefit from the introduction of blind raters.

A second criticism of the study is that medication was not controlled. In such a detailed investigation of the process of change, any changes in medication may have had a large impact on beliefs and distress. However, as shown in the study, change in beliefs for all participants only occurred during cognitive restructuring of those beliefs, such consistent change cannot be attributed to changes in medication.

In summary, the results of the study show that formulation has little or no impact on negative self-evaluative beliefs, distress, or delusional beliefs. The study provides further support for CBT as an effective treatment for auditory hallucinations. However, it also shows that CBT for auditory hallucinations only has a significant impact on distress levels (mood and symptomatology) in 50% of cases. The modest results of the study re-emphasise the need to continue to investigate the impact of the different components of CBT in order to provide the most effective treatment package for people who hear voices.

References

American Psychiatric Association. (1994) Diagnostic and Statistical Manual of Mental Disorders (4th Edition). (DSM IV): Washington, DC. American Psychiatric Association.

Beck, A.T. (1967). Depression: Clinical, Experimental and Theoretical Aspects. New York: Harper & Row.

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

Bentall, R.P., Kinderman, P., & Kaney, S. (1994). Cognitive processes and delusional beliefs: attributions and the self. Behaviour Research and Therapy, 34, 331-341.

Chadwick, P.D., Lees, & Birchwood, M. (2000). Beliefs about voices questionnaire- revised (BAVQ-R) (in press). British Journal of Psychiatry.

Chadwick, P.D.J., Sambrooke, S., Rasch, S., & Davies, E. (2000). Challenging the omnipotence of voices: group cognitive therapy for voices.(in press) Psychological Medicine.

Chadwick, P., & Trower, P. (1996). Cognitive therapy for punishment paranoia: a single case experiment. Behaviour Research and Therapy, 34, 351-356.

Chadwick, P., Trower, P., & Birchwood, M. (1996). Cognitive therapy for delusions, voices and paranoia. Chichester: Wiley.

Department of Health. (1999). National Service Framework for Mental Health Delivering modern standards for mental health. 23rd November 1999, Shaw Park Plaza Hotel, London.

Ellis, A. (1962). Reason and Emotion in Psychotherapy. New York: Lyle Stuart.

Fowler, D., Garety, P.A., & Kuipers, L. (1995). Cognitive Behavioural Therapy for People with Psychosis: A Clinical Handbook. Chichester: Wiley.

Fowler, D., Garety, P., & Kuipers, E. (1998). Understanding the inexplicable: an individually formulated cognitive approach to delusional beliefs. In C. Perris & P.D. McGorry (Eds.). Cognitive Psychotherapy of Psychotic and Personality Disorders: Handbook of Theory and Practice. Chichester: Wiley. (pp 129-146)

Gloaguen, V., Cottraux, J., Cucherat, M., & Blackburn, I.M. (1998). A meta-analysis of the effects of cognitive therapy in depressed patients. Journal of Affective Disorders, 49, 59-72.

Greenberger, D., & Padesky, C.A. (1995). Mind over mood: change the way you feel by changing the way you think. New York: Guilford.

Haddock, G., McCarron, J., Tarrier, N., & Faragher, E.B.(1999). Scales to measure dimensions of hallucinations and delusions. The psychotic symptom rating scales (PSYRATS). Psychological Medicine, 29, 4, 879-889.

Jones, C., Cormac, I., Mota, J., & Campbell, C. (1999). Cognitive-behaviour therapy for schizophrenia. The Cochrane Library, Issue 3. Oxford: Update Software.

Kazdin, A.E.(1982). Single Case Research Designs. New York: Oxford University Press.

Morley, S. (1996). Single Case Research. In G Parry & F.N.Watts (Eds). Behavioural and Mental Health Research. A Handbook of Skills and Methods. Second edition. Erlbaum (UK). (p277-315).

Padesky, C. (1994). Schema change processes in cognitive therapy. Clinical Psychology and Psychotherapy, 1, 267-278.

Persons, J. B. (1989). Cognitive therapy in practice: a case formulation approach. New York: W.W.Norton.

Power, M., & Brewin, C.R. (1997). The transformation of meaning in psychological therapies. New York: Wiley.

Segal, Z.V., Gemar, M., & Williams, S. (1999). Differential cognitive effects to a mood challenge following response to either cognitive therapy or pharmacotherapy for unipolar depression. Journal of Abnormal Psychology, 108, 3-10.

Sensky, T., Turkington, D., Kingdon, D., Scott, J.L., Scott, J., Siddle, R., O'Carroll, M., & Barnes, T. (2000). A randomized controlled trial of cognitive-behavioural therapy for persistent symptoms in schizophrenia resistant to medication. Archives of General Psychiatry, 57, 165-172.

Tarrier, N., Wittkowski, A., Kinney, C., McCarthy, E., Morris, J., & Humphreys, L. (1999). Durability of the effects of cognitive-behavioural therapy in the treatment of chronic schizophrenia: 12-month follow-up. British Journal of Psychiatry, 174, 500-504.

Trower, P., Casey, A., & Dryden, W. (1988). Cognitive behavioural counselling in action. London, UK: Sage.

Wykes, T., Parr, A-M., & Landau, S. (1999). Group treatment of auditory hallucinations: exploratory study of effectiveness. British Journal of Psychiatry, 175, 180-185.

Young, J., & Beck, A.J. (1980). Cognitive therapy scale and rating manual, unpublished manuscript.

Zigler, E., & Glick, M. (1988). Is paranoid schizophrenia really camouflaged depression? American Psychologist, 43, 284-290.

Zigmond, A.S., & Snaith, R.P. (1983). The Hospital Anxiety and Depression Scale. Acta Psychiatrica Scandinavica 67, 361-70.

Figure 1.

BELIEF RATINGS AT EACH SESSION AND AT ONE MONTH FOLLOW-UP

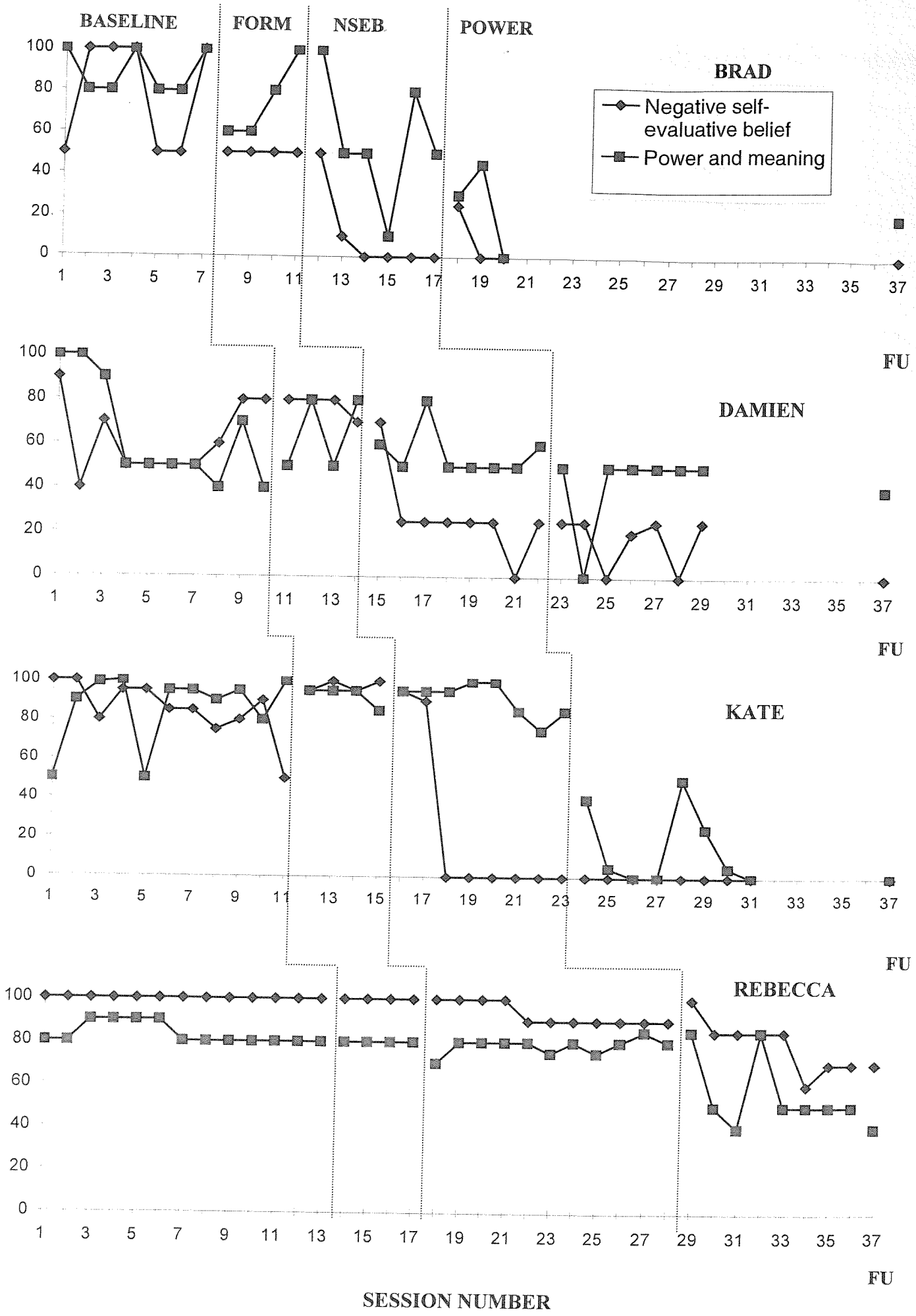


TABLE 1. PSYRATS and HADS scores at assessment and at the end of each intervention phase.

Participant	Measure	Treatment Phase					
		Assess	Base	Form	NSEB	Power	Follow-up
BRAD	<i>PSYRATS</i>	36	34	37	33	17	23
	<i>Anxiety</i>	16	19	18	14	14	5
	<i>Dep</i>	18	9	14	2	3	0
DAMIEN	<i>PSYRATS</i>	37	32	33	31	33	31
	<i>Anxiety</i>	11	10	11	10	13	11
	<i>Dep</i>	6	7	14	4	4	2
KATE	<i>PSYRATS</i>	40	36	32	29	20	26
	<i>Anxiety</i>	17	15	11	8	3	9
	<i>Dep</i>	18	9	11	1	0	1
REBECCA	<i>PSYRATS</i>	37	35	33	29	29	21
	<i>Anxiety</i>	16	16	20	19	14	18
	<i>Dep</i>	19	16	13	17	15	15

Key: *PSYRATS*: Total score on Auditory Hallucinations Rating Scale

Anxiety: Anxiety score on Hospital Anxiety and Depression Scale

Dep: Depression score on Hospital Anxiety and Depression Scale

Critical Overview

The study employed a single-case multiple-baseline design to investigate the impact of three components of CBT on negative self-evaluative beliefs, beliefs about voices (secondary delusional beliefs) and distress levels. The study also investigated the relationship between the two target beliefs.

The study has a number of strengths. The first is that provides an investigation of the process of belief change in CBT for auditory hallucinations. The randomised controlled trials (RCT's) that have shown that CBT is an effective treatment for psychosis, have also found that a control treatment (befriending/supportive counselling is equally effective at least at end of treatment. The modest results of the RCT's have raised a number of questions concerning the active ingredients of therapy for psychosis. The RCT's do not provide information as to how cognitive therapy actually works. By using single-case methodology, I could begin to explore which components are most important to ensuring belief change and distress reduction. I was also able to begin to evaluate in what sequence these components of CBT should be introduced to be most effective.

A second strength of the study is that it provides a detailed description of those who participated in the study and therefore can begin to provide information concerning who can most benefit from CBT. In addition, the individual focus of the study highlights the individual variability in both presentation of difficulties and progress during therapy.

The study also has its limitations, one of these is the small sample size which severely limits the generalisability of the results. However, such in-depth research can only realistically be conducted using single-case design. A further limitation is that fact that due to the limited time available for the study, I was unable to match the participants for length of time hearing voices or control for medication. Controlling both of these would have improved the reliability and validity of the results.

The design of the study provided an opportunity for an extended period of assessment, which in the case of one participant was thirteen sessions. This extended period of assessment provided the opportunity to build a strong therapeutic alliance and to gather all the relevant information before attempting to restructure cognitions. Although this was not tested as part of the study, my belief is that this extended assessment phase was an important factor in the effectiveness of the therapy. In one case it was only after five sessions that we established sufficient trust for Kate to tell me about her traumatic experiences and I was only then able to discover the basis of her negative self-evaluative beliefs. It is also important to consider that although all the participants had extremely distressing difficulties and all expressed suicidal ideation, they all engaged in a treatment that did not offer any solutions to their problems until session eight onward, but simply provided an opportunity to be listened to. This study emphasises the importance of an extended period of engagement when working with people with psychosis.

As the therapist within the study, I had to rapidly learn to use Dr Paul Chadwick's method of CBT for psychosis. This experience demonstrated to me the way in which the practice of CBT varies according to the practitioner. This further emphasises how difficult it is to compare the results of the large randomised

controlled trials, not only do they use different components of CBT but their method of application also varies. The need for more explicit information on how to apply CBT was highlighted while conducting this research.

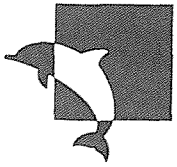
While this study provided evidence that formulation does not function to alter beliefs or reduce distress, it highlighted for me how working to produce a comprehensive formulation sharpens clinical practice and provides a framework for planning sessions and reviewing progress in therapy.

Appendices

Appendix I	Ethics committee approval
Appendix II	Information sheet and consent form
Appendix III	Belief rating scales
Appendix IV	Formulation diagram
Appendix V	Notes for contributors to Psychological Bulletin
Appendix VI	Notes for contributors to Behavior Therapy

Appendix I.

Ethics committee approval



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FAO Clare Williams
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University of Southampton
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23rd July 1999

Dear Clare,

I am writing to confirm you that your ethical application titled, "Cognitive behavioural therapy for voices", has been given approval by the department.

Should you require any further information, please do not hesitate in contacting me on (01703) 593995.

Yours sincerely,

Kathryn Smith
Academic Secretary

Appendix II.

Information sheet and consent form

Consent Form

Individual cognitive behavioural therapy for people who hear voices

Please complete the following questions:

please delete as
necessary

Have you read the information sheet?	Yes/No
Have you had the opportunity to ask questions?	Yes/No
Have you received satisfactory answers to all your questions?	Yes/No
Have you received enough information about the evaluation?	Yes/No

Do you understand that you are free to withdraw from the study:

- At any time?
 - Without having to give a reason?
 - And without it affecting your future treatment?
- Yes/No

Do you agree to take part in this evaluation? Yes/No

Signed..... Date.....

Name (in block letters).....

Appendix III

Belief ratings scales

Belief conviction rating scales

Negative self-evaluative belief

1. 'I am bad'

0%-----10-----20-----30-----40-----50-----60-----70-----80-----90-----100%

Not at all true

Totally true

Delusional belief

2. The voices are totally powerful and controlling and are not me.

0%-----10-----20-----30-----40-----50-----60-----70-----80-----90-----100%

Not at all true

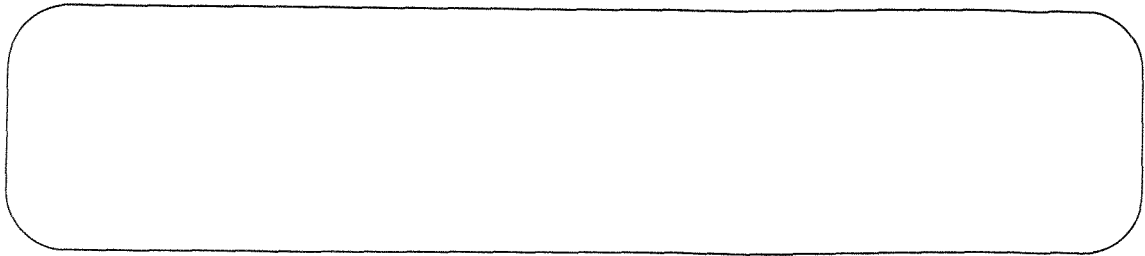
Totally true

Appendix IV

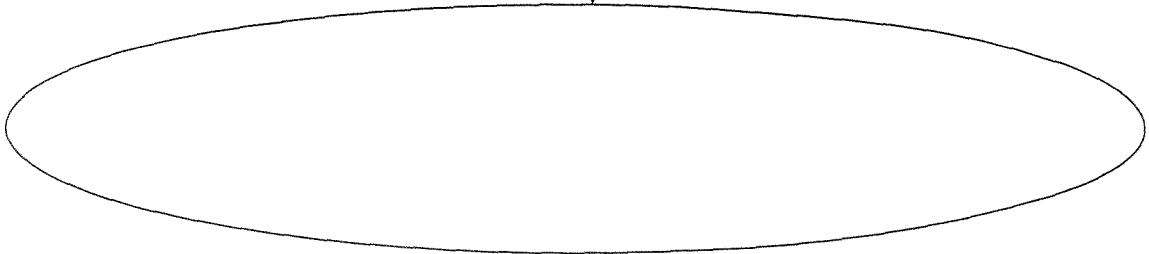
Formulation diagram

Cognitive Therapy Understanding of Current Problems

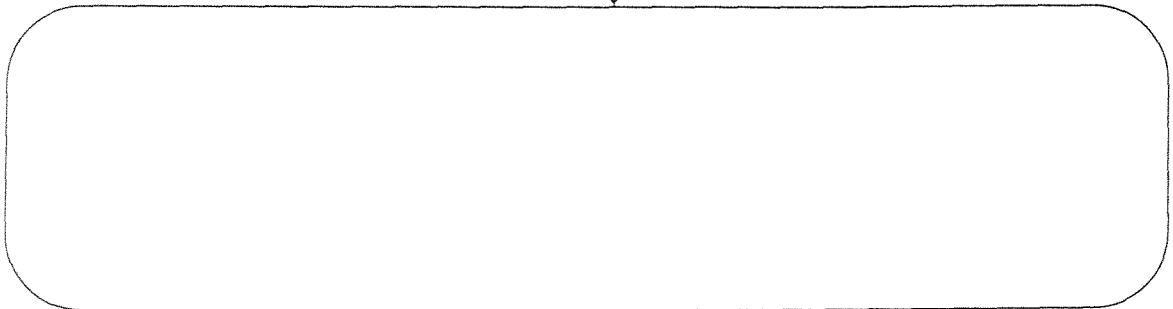
Formative Experiences
(pertinent childhood & early adulthood experiences)



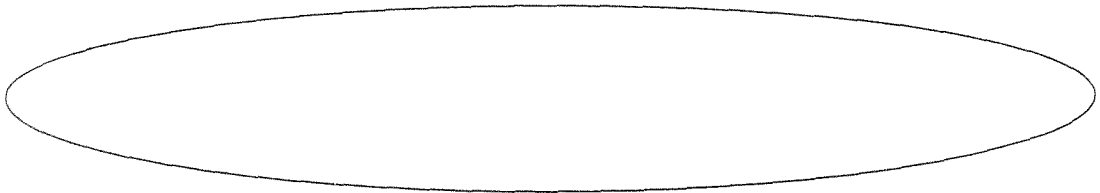
Core Beliefs
(re: self, others, the world, future)



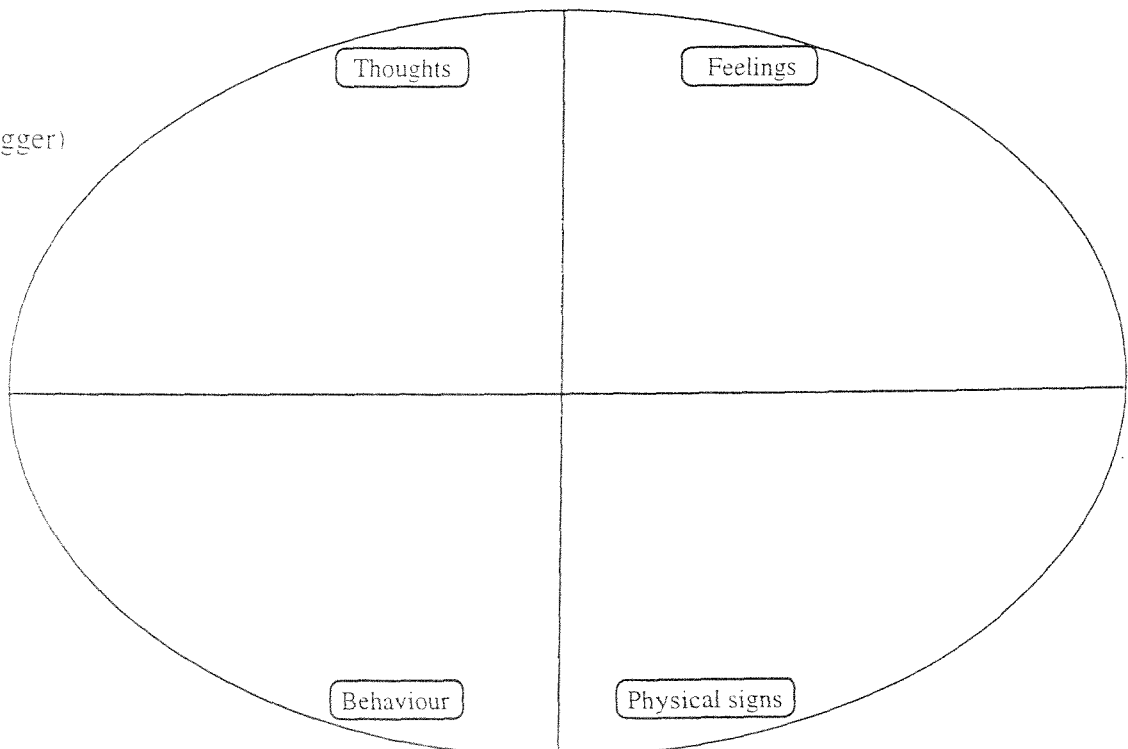
Rules for Living
(statements and behaviours arising from core beliefs)



Onset
(event, experience or situation that marked the start of the problem)



Situation
(external or internal trigger)



Maintaining Cycle

Appendix V

Notes for contributors to Psychological Bulletin

Instructions to Authors

Authors should prepare manuscripts according to the *Publication Manual of the American Psychological Association* (4th ed.). All manuscripts must include an abstract containing a maximum of 960 characters and spaces (which is approximately 120 words) typed on a separate sheet of paper. Typing instructions (all copy must be double-spaced) and instructions on preparing tables, figures, references, metrics, and abstracts appear in the *Manual*. Also, all manuscripts are subject to editing for sexist language.

Masked review will be first an author's option. If masked review is not requested in a cover letter, it will become the prerogative of the processing editor. Authors requesting masked review are requested to include with each copy of the manuscript a cover sheet, which shows the title of the manuscript, the authors' names and institutional affiliations, and the date the manuscript is submitted. The first page of the manuscript should omit the author's name and affiliation but should include the title of the manuscript and the date it is submitted. Footnotes containing information pertaining to the authors' identity or affiliations should be on separate pages. Every effort should be made to see that the manuscript itself contains no clues to the authors' identity.

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Appendix VI

Notes for contributors to Behavior Therapy

INFORMATION FOR AUTHORS

Behavior Therapy is an international journal devoted to the application of behavioral and cognitive sciences to clinical problems. It primarily publishes original research of an experimental/clinical nature which contributes to the theories, practices, and evaluations of behavior therapy, broadly defined [see Editorial, *Behavior Therapy*, 1990, 21, pp. 1–2]. Although the major emphasis is placed upon empirical research, methodological and theoretical papers as well as evaluative reviews of the literature will also be published. Case studies, where the interventions have not been evaluated experimentally, and clinical replication series will be published [see Announcement, *Behavior Therapy*, 1996, 27, pp. 4–5]. The format for publication includes articles, case studies, the clinical replication series, and letters to the Editor concerning issues raised in manuscripts previously published in *Behavior Therapy*.

Manuscripts may be submitted to the Editor, J. Gayle Beck, Ph.D., SUNY at Buffalo, Department of Psychology, Park Hall, Buffalo, NY 14260.

All manuscripts should be prepared in conformity with the format described in the *Publication Manual of the American Psychological Association*, Fourth Edition (1994), and it is the responsibility of the author that manuscripts adhere to the format and other requirements of *Behavior Therapy*. The activities described in manuscripts published in the journal should be consistent with the generally accepted standards of ethical practice.

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