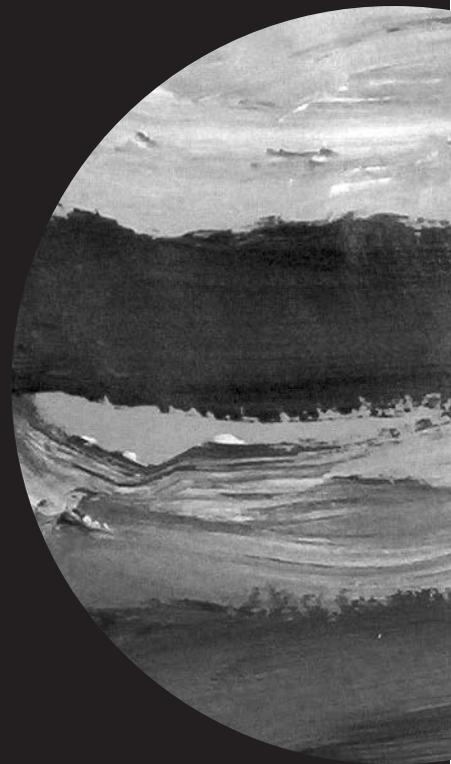


What does cognitive therapy change? - It  
makes you think more carefully  
about the bad stuff

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# What does cognitive therapy change? - It makes you think more carefully about the bad stuff

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## Abstract

There is still a good deal of debate about the exact process of therapeutic change in cognitive therapy. The search for the definitive mediator has not yet provided any coherent answers. This investigation examines the possibility that cognitive therapy affects the way we retrieve negative memories, leading to more effortful processing and reappraisal of material that does not help emotional wellbeing. It is argued that this could be a key element of the change process.

**Keywords:** cognitive therapy; CBT; autobiographical memory; depression

## Introduction

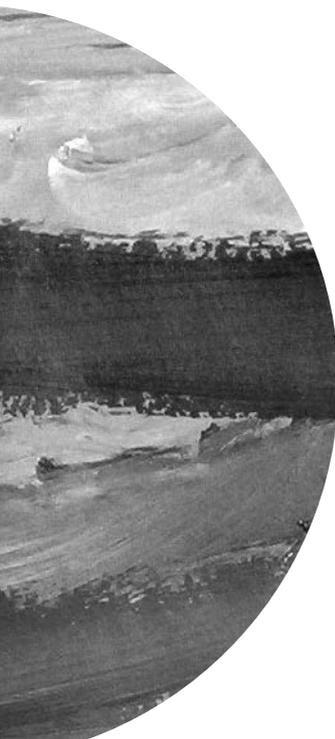
When a person becomes depressed and goes to their GP, they will be assessed using a number of fairly crude diagnostic criteria. How do they feel (hopeless/helpless)? How are they coping at work? How are their sleep pattern, appetite, concentration, and temper? The GP may note whether the person is weepy, self critical ('I'm useless!') and so on. Having decided that the patient meets the criteria for depression, the GP is most likely to prescribe an anti-depressant, request a review in a couple of weeks and then leaves the person to get on with it. In reality this process works reasonably well. The majority of sufferers recover within a fairly short time (generally less than six months) and most of these will go on to lead perfectly good and happy lives without further ado and without relapsing. Indeed, given that modern antidepressants work pretty well for many people, the validity of 'talking therapies' such as cognitive therapy may be open to question.

There is now a wealth of research papers comparing the efficacy of drugs and different forms of psychotherapy, many with equivocal findings. Indeed a comprehensive Health Technology Assessment research project (King, Sibbald, Ward, Bower, Lloyd, Gabbay and Byford, 2000) found that in primary care based treatment of depression and anxiety there was no difference between non-directive counselling, cognitive-behaviour therapy and usual GP care at 12-month follow-up. However, there does appear to be a consistent thread through the literature that supports the usefulness of certain kinds of psychotherapy. Thus, psychotherapy, in particular cognitive therapy, appears to confer some resilience to future episodes of depression, a resilience not conferred by the administration of antidepressants. In the jargon of depression research, it reduces vulnerability. Since a significant proportion of people who become depressed go on to have further episodes, any reduction in depression vulnerability sounds useful (see Ingram, Miranda and Segal, 1998 for a most elegant discussion of this area). The important question then surrounds the basic mechanics of cognitive therapy, thus: 'what does psychotherapy change inside my head that is not changed by antidepressants?'

## The change process: How does therapy work?

The action of modern antidepressant medication is well described (Feighner, 1999). The general principle is this. Depression is caused by a neurochemical imbalance in the brain, which is corrected by antidepressant medication. So, if a depressed person's brain is short of serotonin, a Selective Serotonin Reuptake Inhibitor (SSRI) will prevent the brain absorbing so much serotonin, and the imbalance is corrected. There are one or two major flaws in the argument (see Andrews 2002) but by and large the logic is sound. Unfortunately for psychotherapy, cause and effect is not quite so obvious.

The research community has engaged in all kinds of interesting exercises to identify the important changes that take place inside people's heads as a result of



psychotherapy and have not come up with much. There is good evidence that psychotherapy does have very positive outcomes. Research by colleagues in Wakefield (Lucock, Leach, Iveson, Lynch, Horsefield & Hall, 2003) highlight a range of indicators that suggest that people get better after different types of 'talking' therapy. For instance, routine measures like the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), or more recently the Clinical Outcomes in Routine Evaluation – Outcome Measure (CORE – OM: Barkham, Margison, Leach, Lucock, Mellor-Clark, Evans, Connell, Audin & McGrath, 2001) show impressive improvements over the course of psychotherapy and at follow-up. Other measures such as self-esteem, social anxiety, and interpersonal functioning provide further testimony to the effectiveness of different psychotherapeutic approaches, particularly cognitive therapy (Blackburn and Twaddle 1996). Social indicators like employment are also useful as outcome measures (Billings, Cronkite, & Moos, 1983), but none of these 'outcomes' tell us much about the 'process' of psychological change, or what goes on inside a person's head after talking to a psychotherapist. Some researchers have tried to get a lead on this by predicting what should happen to a person if a particular model of psychotherapy really works according to the basic principles that guide it. Another term for this is its 'mode specific action'. Thus, psychodynamic psychotherapy, which aims to uncover and resolve unconscious conflicts, might be expected to lead to ego-strengthening. On the other hand cognitive therapy, which aims to identify and correct unhelpful thoughts, should lead to less dysfunctional thinking. However, investigations of the 'mode-specific actions' of different types of therapy for depression have failed to show much in the way of predicted differences (Imber, Pilkonis, Sotsky, Elkin, Watkins, Collins, Shea, & Leber, 1990).

A number of cognitive phenomena have been proposed as 'mediators' of change in depression, including automatic thoughts and underlying assumptions and beliefs (Whisman, 1993, DeRubeis, Evans, Hollon, Garvey, Grove, & Tuason, 1990). Such phenomena sound logical but are quite difficult to measure accurately and tend to be a bit unpredictable. There are instruments for exploring our cognitive distortions and unhelpful thinking patterns, for instance the Dysfunctional Attitude Scale (Weissman and Beck 1978) and the Automatic Thought Questionnaire (Hollon and Kendall 1980). These have been investigated in some detail over the course of an episode of depression, and there is some supportive evidence to the effect that, as people recover from depression, the scores on these measures subside (Ingram, Miranda and Segal, 1998). However, as Whisman (1993) points out, there are particular difficulties with global (overall) scores for measures such as the DAS. Thus, Power, Duggan, Lee, & Murray (1995) report a general insensitivity of the global score of the DAS, while subscales such as the dependency subscale (the sum of all responses about dependency) revealed differences between recovered depressed and non depressed groups.

The general conclusion is that self-report measures of cognitive vulnerability should focus on specific rather than global effects, a finding supported by a more recent longitudinal survey of depression (Farmer, Harris, Redman, Mahmood, Sadler, & McGuffin, 2001) which reported an inconsistent relationship between DAS scores and recovery from depression. Basically, sometimes the scores seemed to follow the path of recovery and sometimes they didn't change at all. Such findings suggest that recovery can take place in the absence of cognitive change, implying that in some people depression vulnerability remains long after overt recovery; in effect it is 'latent' or dormant. Indeed some researchers have explored this latent aspect of depression and have concluded that depressed thinking may not show itself unless the appropriate emotional state is also activated. Thus Miranda, Persons, & Nix Byers (1990) managed to alter DAS scores (creating depressed thinking) by inducing low mood in experimental participants. They concluded that depressed thinking styles were actually mood dependent, a finding that on the surface appears obvious, but suggests that moods create thoughts rather than the other way round, which is the standard line pushed by cognitive therapists. This is undoubtedly rather confusing.

Whisman (1993) also laments the relative lack of what he calls 'nonintrospective' (not directly examining one's own thoughts or feelings) experimental paradigms being used in the exploration of mediation in cognitive therapy. He cites examples from the literature of non-questionnaire methods that have been developed for the assessment of self-schema (Safran, Segal, Hill, & Whiffen, 1990). Many of these methods involve such measures as memory response latencies or recall scores (how

long it takes to recall a memory or the amount of the memory recalled). Indeed, memory has become well established as the cornerstone in depressed thinking (Williams 1997). Firstly, it can become biased so that a depressed person only tends to recall negative events (Lloyd & Lishman 1975). Secondly, memory can become 'overgeneral'. In this case a depressed person may find it very hard to recall specific events, tending to lump things together into categories. They remember 'being at school' but find it hard to remember a particular day at school - the detail seems to have disappeared. The tendency to recall negative events more easily is not, apparently, simply because depressed people have fewer positive events in their lives. Teasdale and Fogarty (1979) demonstrated this by studying a sample of student volunteers who were not depressed and manipulating their mood using a 'mood-induction procedure'. They replicated the negative recall tendency with depressed mood, but also discovered that negative moods did not so much speed the retrieval of negative events as slow down the recall of positive events. Interestingly, in a recent article, Sheppard & Teasdale (2000) used speed of response to the Dysfunctional Attitude Scale and neutral statements to investigate the different ways these items were judged by depressed and non-depressed people. They found that non-depressed people tended to slow down when confronted with responses that veered towards a negative item or event (e.g. "People should be criticised for their mistakes"), whereas depressed people showed no selective slowing of this sort. This finding suggested that depressed people are prone to absorb negative thinking into their lives without a second thought (as it were) while the non-depressed population tend to spend a bit more time weighing it up.

All of this points to the complexity of depression, depressed thinking and the inherent difficulty understanding the mechanics of cognitive change. However, it bodes well for Whisman's (1993) conclusion that support for the cognitive mediation hypothesis would be enhanced if it could be shown that cognitive therapy produced specific effects on these nonintrospective measures of cognitive operations and structures, as well as producing effects on the other 'outcome' measures mentioned above. The findings above suggest that the impact of cognitive therapy (and other talking therapies) may more reliably be reflected in such 'nonintrospective' measures, but as yet no study has used them as a way of comparing the outcome of different therapeutic approaches in the treatment of depression. In particular, it would be interesting to compare talking treatments to anti-depressants.

## Aims of the study

This study focused on response latencies to autobiographical memory recall (the time taken to recall a memory about particular events in our lives), a nice solid nonintrospective measure as referred to by Whisman (1993). The design was what is known as 'cross-sectional', aiming to compare recall response latencies in the following three groups of people.

- People who were currently depressed at the time of the study. (CD)
- People who had recovered from depression using antidepressants alone. (RAD)
- People who had recovered from depression using cognitive therapy. (RCT)

This report is based on findings that were part of a broader study to be reported elsewhere (Lister, Barton and Morley 2003). The broader investigation used the Autobiographical Memory Test (Williams and Broadbent 1986), which focuses on the ability of depressed people to recall specific events from different parts of their lives. This involves the use of record cards with single words on them as 'cues' for memory retrieval. The study included two additional variables, the positive or negative tone of the cue word (otherwise known as valency) and the time period (otherwise known as epoch) from which the memory came (recent or remote). So for the purposes of this report, cue valency refers to the word used to elicit the memory (happy, sad, shame, treat etc), and epoch refers to one of 2 time periods; recent (the last 12 months), or remote (5 to 10 years ago). The time taken to retrieve a memory was of interest because of its non-introspective qualities. The point of this was to use naturally occurring data to test a particular theory. Previous studies using the Autobiographical Memory Test have not found particularly revealing results in

relation to latency. Some investigators (Kuyken & Dalgleish, 1995; Williams & Scott, 1988) did not find any differences in the time taken to retrieve memories for groups of depressed and non-depressed people, regardless of whether the cue words were positive or negative. Other investigators, (Pierce, Morley and Trepka, 1995, Williams & Dritschel 1992) did find significant effects across both groups according to the time period (epoch) from which the memory was being sought. This showed (perhaps not surprisingly) that more remote memories took longer to retrieve than recent memories. Thus, it seemed to take more time to access a memory that was further away in time. The difference between this investigation and prior studies was the nature of the groups under scrutiny. In this study direct comparisons could be made between a depressed group (CD) and two 'recovered' groups that had experienced different treatments for their depression (RAD and RCT). This would hopefully highlight any differences in the impact of the two treatments.

## Hypotheses

The main hypothesis was that there would be a difference between the three groups in the time taken to retrieve memories when dealing with negative material. In keeping with the study by Shepherd and Teasdale (2000) the experimental assumption was that depressed people would have faster latencies to negative cue words than the two groups of people who had recovered from depression. The group receiving cognitive therapy would show the slowest response latency. Thus, the depressed group would very rapidly latch onto miserable memories whereas the cognitive therapy group would slow down as they encountered something that led them down that path, perhaps (as a result of therapy?) trying to steer away from negative memories or interpretations of the world.

The performance of the group of people who had recovered from depression using antidepressants alone would lie somewhere in-between. Where positive cue words were used it was expected that this difference would disappear.

## Participants

Participants were recruited through a local primary care service, and from the caseloads of practitioners in an adult psychological therapy service. Practitioners of CBT included 2 CBT trained nurse therapists, two clinical psychologists with a background in CBT, a counsellor with additional CBT training and a General Practitioner who worked in the department as a cognitive therapist. A standard letter of invitation was sent to potential participants who could opt-in if they felt inclined. The two groups who had recovered from depression were treatment and symptom-free at the time of testing, and had been so for at least three months. The currently depressed group were recruited from both services. All participants were paid a small honorarium to cover their expenses. A total of 51 people joined the project with exactly 17 in each group.

## Criteria for inclusion and allocation of participants to groups

The Inventory to Detect Depression over a Lifetime (IDDL: Zimmerman and Coryell, 1987) was used to establish that all participants had experienced at least one episode of major depression within their lifetime. The Beck Depression Inventory (BDI-2: Beck, Steer, & Brown, 1997) was used to validate their current depression status (depressed versus non-depressed). A BDI score of 17 was used as the cut-off for depression. Whilst this may appear high (10 is often viewed as a cut-off for depression), it is quite consistent with other research and provides greater differentiation than lower scores. Thus, a BDI score of 17 almost guarantees an accurate diagnosis of depression (see BDI -2 manual). The mean Beck Depression Inventory Scores were as follows: CD=25.06, RAD=8.35, RCT=9.0. This meant that whilst there was no (statistical) difference between RAD and RCT, at the time of testing both these 'recovered' groups were significantly different to the CD group in terms of symptoms of clinical depression. Although this may seem a bit obvious, it was important to establish that this was the case. In other ways, the groups were very well balanced. They were equivalent in terms of IDDL total symptom score and there was no difference in average age (mean = 45.5). There were more women than men in all three groups, this proportion being slightly greater for the CD group.

# Measuring the time taken to retrieval of memory

The latency to first retrieval was recorded in seconds for all memories using a conventional stopwatch. After some dedicated practice to orient them to the time period (last year, 5 - 10 years ago), participants were given cue words (e.g. happy, funny, shame, misery) on a record card and asked to indicate verbally ("got one!") as soon as they had found a memory associated with the cue. Mean latencies for individuals and groups were then calculated according to epoch and cue word tone, as detailed in table 1.

**Table 1 – Mean (average) time to first retrieval**

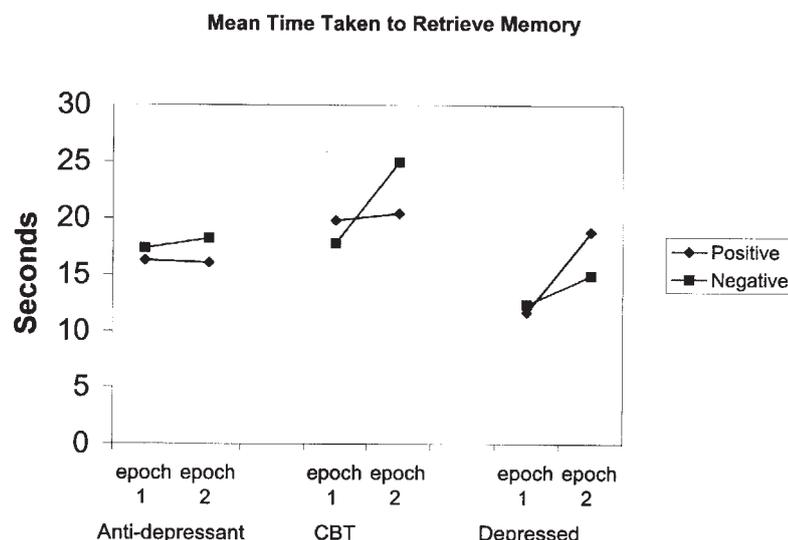
Time to retrieval (secs) (Standard deviation)	Recovered Anti-depressant	Recovered CBT	Currently depressed	Total
Epoch one (last year)				
Positive valency (tone)	16.3 (10.0)	19.8 (9.0)	11.7 (5.2)	15.9 (8.8)
Negative valency (tone)	17.4 (7.2)	17.8 (8.7)	12.4 (6.2)	15.8 (7.8)
Epoch two (5 to 10 years ago)				
Positive valency (tone)	16.1 (8.3)	20.4 (8.8)	18.8 (10.5)	18.4 (9.2)
Negative valency (tone)	18.2 (9.9)	25.0 (12.0)	14.9 (9.0)	19.4 (11.0)

## Results

Simply observing Figure 1 gives a pretty good impression of any differences between the groups. Thus, there appear to be clear differences between the depressed group (CD) and the recovered cognitive therapy group (RCT) in the speed of retrieving negative memories from both the recent and remote epochs. Differences between either of these two groups and the recovered anti depressant group (RAD) are not so clear. This seems to support the hypotheses above that depressed people are faster than people who have recovered from depression. However, the aim of this study was to demonstrate that any differences were 'real', and not just due to chance. This involved the use of well-tried mathematical procedures that can calculate the probability of these findings being meaningful.

A repeated measures Analysis of Variance (ANOVA) was used to explore within group and between group differences in the time taken to retrieve a memory. Essentially this tells us whether the three groups differ in speed of recall taking into account the

**Fig 1 – Mean time to retrieve memory**



emotional tone of the cue word, and the epoch from which the memory came and all of the combinations of valency and epoch that could possibly exist. The results of the ANOVA are set out in table 2.

**Table 2 – Repeated measures ANOVA on latencies to first retrieval**

Effect	df	Mean square	F	p
Between subjects				
Groups	2	684.20	3.585	.035*
Error	48	190.87		
Within subjects				
Epoch	1	461.10	6.596	.013*
Epoch * group	2	95.72	1.369	.264
Error	48	69.91		
Valency	1	9.28	.320	.574
Valency * group	2	51.69	1.781	.179
Error	48	29.02		
Epoch * valency	1	14.14	.471	.496
Error	2	132.30	4.409	.017*
Epoch x valency x group	48	30.01		
Error				

## Main analysis

The important numbers in Table 2 are the ones with an asterisk beside them. These indicate a difference between the groups that is beyond chance. This kind of difference is often referred to as a 'significant' difference. Having spotted a potential difference between the groups further calculations need to be done to see which group or groups are different from which. Comparing and contrasting groups like this is often called 'post-hoc' statistics'.

In this study there were significant differences between the three groups in speed of retrieval. Further examination using post hoc tests revealed that the only real difference was between the CD group and the RCT group. The RAD group was hung in between and showed itself to be no different to the RCT or the CD groups. In keeping with the results of other studies, all three groups were significantly slower at retrieving memories from the remote epoch (5 to 10 years ago) as opposed to the recent (last 12 months), but this slowing seemed more or less the same across the three groups.

However, the most interesting and meaningful finding emerged when the emotional tone of the cue word and the time period (epoch) of the memory were considered together. In this analysis, the post-hoc tests revealed that, with more distant memories, the RCT group were significantly slower than the CD group in the retrieval of recollections that were responses to negative cues. This may seem a bit of a leap of faith, but in this case we were looking at the impact of two different variables and combining them. Firstly we looked at the effect of the positive or negative attributes (valency) of the cue word, and secondly we examined the effect of the recentness of the time period from which the memory came. This let us look at somewhat more detailed questions. We knew from the first 'trawl' of results that the recentness effect (more remote memories take longer to retrieve) affected all three groups about the same. However, was this effect consistent if we took into account the valency of the word that was acting as a cue for the memory? This study revealed a very pronounced difference in the way the groups behaved, best described as a relative

slowness on the part of the RCT group in retrieving memories that came from a more distant time period and which were cued by words that were negative. For the most part (about 99%), these memories were themselves emotionally negative. The following is an attempt to summarise these results and make sense of them in terms of different responses to treatments.

## Discussion: what's this got to do with cognitive therapy?

In cognitive therapy the process of change is brought about through a range of techniques that may well affect the way events are remembered. Tools like automatic thought records and positive data logs (Greenberger and Padesky, 1995) help people to look carefully at their memories of past events and to reappraise difficult (negative) emotional experiences. The therapeutic process also involves identifying the assumptions and core beliefs an individual holds with a view to changing those that are clearly unhelpful. The way a person makes sense of their world is bound to depend on their past experiences and therefore, by default, beliefs and attitudes will be shaped by personal memories. The idea that personal memory is important in shaping expectations about the self, the world and the future ("I think this way because of how I remember things") is fundamental to the content and process of CBT (and most other forms of psychotherapy). It is also consistent with much academic dialogue on the nature of psychological distress (Williams, 1996; Williams, 1997; Teasdale, Segal, & Williams, 1995; Teasdale, 1996; Brewin, 1989; Brewin, 1996).

Whilst the status of CBT's 'mode-specific' effects may still be open to question, consideration of the role of memory in the therapeutic process presents us with a subtle shift away from a directly identifiable mediator such as scores on the Dysfunctional Attitude Scale, to something much more subtle and interesting such as the way potentially depressing thoughts are reviewed, interpreted and processed. These changes, as Whisman (1993) proposes, may not be immediately apparent, but they do have a significant impact on our emotional experience, affecting the way that we think, feel and act. The idea that latency of retrieval might reflect effortful processing is certainly not new within the field of cognitive psychology (McCloskey, Aliminosa, & Sokol, 1991). However, the use of latency measures to infer attitudinal or behavioural responses in the field of social cognition is relatively new territory.

Sheppard & Teasdale (2000) propose that there is a relationship between speed of processing and the type of material that is being accessed. Thus, faster responses reflect rapid access to 'precomputed' beliefs that are consistent with a particular attitude, whereas slower responses might indicate a higher degree of thoughtfulness about whether an attitude or behaviour applies to, or makes sense to that person. In their recent study they refer to this process as 'metacognitive monitoring'. They suggest that slowing down in response to material that challenges emotional wellbeing reflects a controlled process. Thus the non-depressed participants were evaluating potential responses to each DAS item in relation to prevailing predominantly held beliefs. When the non-depressed participants detect a mismatch they double-check the response before translating it into action, hence the slowing of their responses. The tendency for depressed people not to do this is described as a 'deficit in metacognitive monitoring'. In this study the slowing of the recovered CBT group in response to negative cue words on the Autobiographical Memory Test draws an interesting parallel with Sheppard and Teasdale's (2000) findings. Thus, it could be argued that for the RCT group, the process of retrieval on this task (distant memories from negative cues) was for some reason, much more effortful and therefore slower than for the other two experimental groups, perhaps reflecting a kindred tendency for people who have had CBT to reject material inconsistent with their core beliefs or aspirations at that time. In this case the task might lead to the retrieval of distant negative memories, which may well make me feel bad. This fits in well with the idea that cognitive therapy does indeed develop cognitive skills, getting people to rethink dysfunctional thoughts. Memory retrieval might be particularly painful if the memories were from a time period which clearly predates any therapeutic change, hence the difference in the remote (5-10 years ago) epoch.

As Barber & DeRubeis (1989) suggest, cognitive therapy may be effective because it inculcates the habit of having second thoughts about negative thoughts rather than accepting them as valid statements about reality. This particular notion provides the theoretical underpinning for a new but well researched form of treatment, 'Mindfulness-Based Cognitive Therapy' (Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000, Segal, Williams, & Teasdale, 2002) which aims to help recovered

'Mindfulness-Based Cognitive Therapy' (Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000, Segal, Williams, & Teasdale, 2002) which aims to help recovered depressed patients to disengage from negative thought patterns arising in the presence of low mood. However, it is interesting to note that the authors of the new mindfulness-based approach to CBT propose that it may not be useful in the acute phase of a depressive episode, and that the techniques are best taught in a non-depressed state. This suggests once again that mood plays an important role in determining whether we can accept these cognitive changes in the first place!

## Conclusions

This study provided some evidence that cognitive therapy might affect the way people respond to negative memories. In comparison to people who were clinically depressed at the time of the study, people who have recovered from depression using cognitive therapy seem to slow down considerably when asked to retrieve a distant memory from a negative cue. This slowing down by RCT was more significant than any tendency for the CD group to 'speed up' to negative cues, or, for that matter, to slow down to positive cues, since this group showed no difference to the recovered antidepressant group on any of these measures.

It goes without saying that these observations leave lots of questions unanswered and the conclusions must be regarded as speculative rather than concrete proof of anything. However, given that the two recovered groups were clearly very similar in terms of depression status (8.35 vs. 9.0 on the BDI-2) it must raise the questions about whether the effect is a result of the treatments the two groups received. It could be argued that educational or social differences were responsible, but these were analysed in detail and no obvious differences emerged. Another speculation involves what is sometimes referred to as the 'differential sieve' effect. This would contend that people who are appropriate for cognitive therapy are somehow 'naturally' going to behave differently than the other groups. Although this is of course possible, it seems a bit unlikely. From a methodological viewpoint two more charges could be levelled against this investigation. First, it could be argued that cross-sectional studies do not necessarily reflect a valid change process. In other words the difference between RAD and RCT may be due to other, random factors and not therapy. The only way to counteract this argument would be to undertake a prospective study - following up people before and after cognitive therapy to see if they did indeed slow down on their recall of distant negative memories. Secondly, it could be argued that the effect is not specific to cognitive therapy. Thus, any form of talking therapy may have the same impact and it is therefore unreasonable to accord therapeutic rights to cognitive therapy alone. The way to test this would be to introduce another 'talking therapy' group into the study and make direct comparisons. This is ongoing.

Taking all these criticisms into account, this study does suggest that CBT for depression really does affect the way a person thinks. A CBT survivor will tend to slow down on encountering certain types of negatively cued material. It would be nice (for practitioners and clients alike) to think that this was both a therapeutic effect and one that conferred some resistance to future episodes of depression. Perhaps, to repeat Barber & DeRubeis (1989), cognitive therapy is effective because it inculcates the habit of having second thoughts about negative thoughts rather than accepting them as valid statements about reality. In other words, it slows you down when you hit the bad stuff and gives you the time to think it through.

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