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# How effective psychological treatments work: mechanisms of change in cognitive behavioural therapy and beyond

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## Abstract

**Background:** Cognitive behavioural therapy (CBT) has, in the space of 50 years, evolved into the dominant modality in psychological therapy. Mechanism/s of change remain unclear, however.

**Aims:** In this paper, we will describe key features of CBT that account for the pace of past and future developments, with a view to identifying candidates for mechanism of change. We also highlight the distinction between ‘common elements’ and ‘mechanisms of change’ in psychological treatment.

**Method:** The history of how behaviour therapy and cognitive therapy developed are considered, culminating in the wide range of strategies which now fall under the heading of cognitive behavioural therapy (CBT). We consider how the empirical grounding of CBT has led to the massive proliferation of effective treatment strategies. We then consider the relationship between ‘common factors’ and ‘mechanisms of change’, and propose that a particular type of psychological flexibility is the mechanism of change not only in CBT but also effective psychological therapies in general.

**Conclusion:** Good psychological therapies should ultimately involve supporting people experiencing psychological difficulties to understand where and how they have become ‘stuck’ in terms of factors involved in maintaining distress and impairment. A shared understanding is then evaluated and tested with the intention of empowering and enabling them to respond more flexibly and thereby reclaim their life.

**Keywords:** Common factors in psychotherapy; History of CBT and theory; Mechanism of change; Psychological flexibility; Research in CBT

## Introduction

Cognitive behavioural therapy (CBT), which evolved from behaviour therapy (BT) (Salkovskis, 1986) is now a well-established and mature approach to the understanding and treatment of an astonishingly wide range of health problems and beyond. The evidence for the effectiveness of CBT is both broad and compelling, whether considered in terms of common mental health problems such as depression or anxiety disorders in adults (Carpenter *et al.*, 2018; Cuijpers *et al.*, 2023) or across the widest range of diagnoses and age groups (Fordham *et al.*, 2021).

In this context, the present paper will consider some of the issues that have emerged and evolved during the history of BT and CBT, and what these might imply for future developments. We propose that the central challenge which faces us now is understanding the mechanism of

change (MOC), not only in CBT but also more broadly across the widening range of *effective* psychological therapies. We place such consideration in the context of an understanding of the factors that have shaped the development of CBT as a dominant psychotherapy modality. Phenomenology informed research strategies have played a crucial role in the evolution of CBT as an empirically grounded and evidence-based psychotherapy, and most likely will continue to do so. Finally, we offer a detailed consideration of what we propose as the central MOC which applies not only to CBT but also more broadly to other psychological therapies.

### The breadth of CBT

From the early days of behaviour therapy, there has been a bewildering proliferation of strategies and techniques that have given us a class of approaches which fall under the heading of ‘cognitive behavioural therapy’. However, although the range of strategies and interventions currently used to bring about therapeutic change in specific diagnoses is remarkable, there are also data which indicate that the importance of interventions tailored to specific psychiatric problems may not be as great as had been previously thought with transdiagnostic approaches having emerged (Harvey *et al.*, 2004). Helpful and sometimes contrasting interventions in CBT range from applied relaxation to applied tension; from exposure to behavioural experiments; from attention training to cognitive reappraisal, and so on (Clark *et al.*, 1999; Clark and Beck, 2011). In addition, there are also a number of helpful treatments theoretically or topographically similar to CBT, like mindfulness-based cognitive therapy, compassion-focused treatment, behavioural activation, acceptance and commitment therapy, and dialectical behaviour therapy (Cristea *et al.*, 2017; Millard *et al.*, 2023; Piet and Hougaard, 2011; Stein *et al.*, 2021). We need to consider what might unify these apparently contrasting and at times contradictory approaches. We consider that typically the contradictions are to be found in the radically different underpinnings (proposed ‘mechanism of change’) of these varied approaches, which are sometimes at very considerable odds with the strategies and techniques they deploy (see, for example, McLoughlin and Roche, 2023). The topographical similarities of such strategies and techniques are easier to understand in terms of ‘common elements’ of these different therapies (e.g. Collard, 2019),

Other treatment modalities that are theoretically dissimilar, like psychoanalytic/psychodynamic psychotherapies, have (rather late in the day) begun to seek and in some instances demonstrated evidence for their effectiveness (Ravitz *et al.*, 2019; Steinert *et al.*, 2017). CBT, however, remains by far the most studied psychotherapy to date, and none of these psychotherapies have shown to be systematically superior to CBT; in fact it tends to be the other way around (David *et al.*, 2018; Fordham *et al.*, 2021; Hofmann *et al.*, 2012). The growing range of treatments that have passed the fundamental test to become empirically supported therapies (Chambless and Ollendick, 2001) has inevitably given rise to considerations along the lines of ‘why do they all work?’. Is it because there is a ‘final common pathway’ responsible for the effectiveness of all of these diverse psychological treatments? Or is it because there are different mechanisms working for different treatments for the same mental health problems? Or are there perhaps different mechanisms operating in different treatments for different mental health problems? To answer these questions, researchers and therapists alike would do well to focus on the work of Gordon Paul (1967):

‘In all its complexity, the question towards which all outcome research should ultimately be directed is the following: What treatment, by whom, is most effective for this individual with that specific problem, and under which set of circumstances?’

We propose here that the answer to Gordon Paul’s 56-year-old question may ultimately be found in studying mechanisms of change. We arrive at this conclusion through consideration of the

context in which CBT has developed over the last 50 years. Such consideration suggests that nearly all effective developments in CBT have been derived from evolving theoretical understanding of why prevailing treatments were wholly or partially ineffective, and how they could be improved from a better understanding of the mechanisms involved. We highlight a MOC that we suggest is a particularly good fit with the range of approaches which fall under the heading of CBT (Salkovskis, 1996; Sighvatsson *et al.*, 2021) and beyond.

### The evolution of CBT

How did CBT make the transition from a small and ‘upstart’ approach, derided by our psychoanalytic colleagues as at best ineffective and at worst potentially dangerous (Breger and McGaugh, 1965; and subsequently Rachman, 2015; Tryon, 2008), to becoming the first- or second-line treatment for almost all mental health problems? Central to the evolution of early BT was the theoretical and empirical work of Ivan Pavlov and B. F. Skinner. Pavlov’s research on conditioned reflexes is commonly considered to be the precursor of behaviour therapy and consequently CBT (Pavlov, 2003; Rachman, 2009). In his experiments, Pavlov described associative learning of unconditioned (US) and conditioned stimuli (CS) in animals. Even today his ideas are used as an experimental paradigm to characterise abnormal behaviour, e.g. in the inhibition learning theory (Craske, 2015; Craske *et al.*, 2008). However, it is now understood that the simple formation of a ‘reflex’ connection between US and CS explaining conditioned response ( $CS = UC \Rightarrow CR$ ) is much more complicated, and the data suggest that *perception of causality* may underpin how the conditioning process develops (De Houwer, 2020; Mackintosh, 2003; Rescorla, 1988).

Skinner’s research on operant conditioning, again in animal research, influenced clinical psychologists to use operant procedures to help people suffering from mental health problems. This was based on the view that mental health problems involve ‘abnormal’ behaviours under voluntary control and that such behaviour could be reshaped (Rachman, 2015). An example of how these ideas are applied today is parent management training (Kazdin, 2017). Since the initial publication (Skinner, 1957), Skinner’s ideas have had their fair share of criticism. For example, defining mental health problems in terms of ‘verbal behaviour’ is of limited value in explain how we think, speak and feel (Chomsky, 1959; Rachman, 1977).

### From methodological behaviourism to ‘the cognitive revolution’

The further evolution of CBT owes much to the early work of the pioneers of CBT such as Joe Wolpe, Tim Beck and Albert Ellis, amongst others. This second and third generation of clinically grounded theoreticians typically started their training as psychoanalysts or psychodynamic therapists who were dissatisfied with the values and theoretical underpinnings of the psychotherapeutic approaches they had learned, including the rejection of both ‘symptom focused’ therapy and the evaluation of efficacy. These clinical theorists also considered it crucial to experimentally validate the processes and targets underpinning treatment (Beck, 2006; Dozois *et al.*, 2019; Rachman, 2009). Take for example the work of Aaron T. Beck. After graduation from the Philadelphia Psychoanalytic Institute, Beck was interested in validating psychoanalytic concepts and he chose one key concept of the psychoanalytic theory, wish fulfilment (Beck, 2006; Hollon, 2022). According to Freudian theory, individuals suffer from depression because of unconscious rage against others, but due to its unacceptable nature, this rage was repressed and turned against the individual himself, causing depression. To validate this construct, Beck chose to look for hostility in the of content of dreams of depressed individuals and compare it with the content of dreams of non-depressed individuals. Beck found that the content of the dreams of depressed individuals was in fact *less* hostile than that of non-depressed individuals. Instead of

rage and hostility, he found that the content of thoughts of depressed individuals during waking hours and dreams was focused on rejection, abandonment and loss (Beck, 2006; Hollon, 2022). Beck therefore concluded that how people see themselves is one of the basic processes that explain how mental health problems evolve rather than the proposed psychoanalytic processes he set out to investigate (Beck, 2006; Beck, 2019; Hollon, 2022).

A second example is Joseph Wolpe, a pioneer in behaviour therapy. As a physician he treated psychological problems of soldiers coming from the battlefield in the Second World War. Trained as a Jungian analyst, he was dissatisfied with dominant schools of psychotherapy and as a consequence he looked for alternatives in treatment (Rachman, 2009; Rachman, 2015). Wolpe's theoretical formulation stipulated that the MOC in anxiety reduction was the process of 'reciprocal inhibition'. This was in turn an elaboration of Herrington's theory of trans-marginal inhibition (Wolpe, 1958). Although this hypothesised MOC was important in the way it underpinned the practice of systematic desensitisation, these theoretical underpinnings did not hold up under experimental investigation (Paul and Shannon, 1966). Wolpe's work and its dissection by Paul and others encouraged the emergence of a wide range of new treatments, most gaining some empirical support but very few advancing theoretical understanding much beyond the circular proposition that effective treatments for anxiety typically involve the 'common factor' of exposure to feared situations, so exposure must be the underlying 'mechanism of change' (Marks, 1973). This led to the adoption of 'the exposure principle' stating that thorough exposure to fear-related stimuli was common to all successful treatments for anxiety problems. Exposure was therefore hypothesised to be the MOC on the basis of it being a common factor; fear reduction is therefore due to exposure. Exposure is inferred from the occurrence of fear reduction. Therefore, learning theories (Foa and Kozak, 1986; Foa and McNally, 1996) and later cognitive theories (Abramowitz, 2013) provided the justification for the behavioural interventions used, but ultimately failed to identify the MOC involved in effective therapies. This confusion between 'common factors' and 'mechanisms of change' has in our view held the field back.

A further key factor in the evolution of CBT to its current form were the radical behaviourist model of depression put forward by Ferster and Lewinsohn and the evolutionary model of depression by Seligman (Ferster, 1973; Lewinsohn, 1974; Maier and Seligman, 2016). According to these behavioural models, the development of depression is due to low levels of response-contingent positive reinforcement and lack of the availability of events that are positive reinforcement for the depressed person. Therefore, increased access to response-contingent reinforcement can be a hypothesised MOC in helpful treatments for depression such as behavioural activation (Dimidjian *et al.*, 2011; Malik *et al.*, 2021; Martell *et al.*, 2001). Evidence for such a mechanism (beyond treatment outcomes) is, however, extremely weak or even negative (e.g. Janssen *et al.*, 2021).

### How effective psychological therapies evolved: empirically grounded clinical interventions

We will next consider the factors which drove a 50-year period of research leading to evolution in BT then CBT, culminating in the effective dominance of CBT. In the 1950s and 60s, psychotherapy was marked by a degree of complacency and the reliance on the perceived wisdom of authoritative and at times authoritarian leaders of psychotherapy 'schools'. This state of near stagnation at levels of efficacy comparable to rates of spontaneous remission (Eysenck, 1952) stalled development in terms of the understanding of helpful treatment processes and was disrupted by the advent of behaviour therapy with its emphasis on evaluation of both outcome and key processes.

Notably, behaviour therapy and cognitive therapy were evidence-based approaches to mental health problems long before the term was coined, but CBT involves much more than the current meaning of the term. Current CBT can best be described as a set of flexibly applied 'empirically

### Empirically Grounded Clinical Interventions

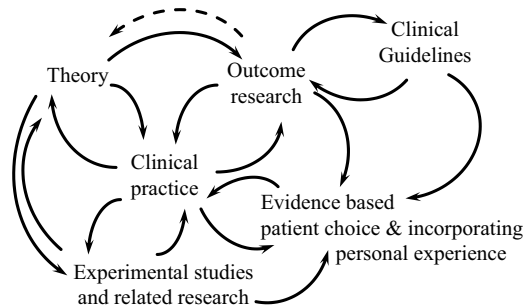


Figure 1. Development of empirically grounded clinical interventions.

grounded clinical interventions', carried out by clinicians who seek to operate as scientist-practitioners (Clark, 2004; Hayes *et al.*, 1999; Salkovskis, 2002; Shapiro, 1961). The continuous and active empirical testing of theory as a way of evolving, developing and refining treatment is central to this framework, and has been the driver not only for new ways of working but also the dissolution and replacement of ineffective or theoretically invalidated approaches. By the time behaviour therapy was widely established 50 years ago, it was clear that central predictions of 'classical psychoanalytic' theory had been comprehensively refuted (Tryon, 2008).

The implicit model that has been applied in developing BT and CBT involves a set of interlinked factors as shown in Fig. 1, which is an elaboration of the model first described by Salkovskis (2002), and linked to the process of developing effective CBT as described in detail in Clark (2004).

Clinical practice and the phenomenology described by those we seek to help is both the target of our work and a source of information and inspiration which drives other aspects of the process of empirically grounded clinical practice and research. Through careful listening to patients' experiences of their psychological difficulties, we begin to form an understanding of the key processes involved within and (sometimes) between individuals, including the extent to which these generalise to others with the same or different difficulties. This understanding can be used to derive and apply theory to the specific experiences of our patients. Clinical understanding and theory may also inform the focus of outcome research by suggesting the type of interventions which should be used, and which process and outcome measures are likely to provide the most relevant information. At the level of the individual, the best therapy can be considered to be the experimental investigation of the single case (Shapiro, 1961; Shapiro, 1985) and leads to the deployment of single case experimental designs.

Research in psychological and psychiatric treatment has been dogged by a common and recurring logical error. The effectiveness of a treatment is *not* evidence for the validity of the theory on which it is based with one important exception. Where a treatment demonstrably modifies a factor crucial to a theory of factors involved in a particular problem, but *does not* impact the hypothesised target of treatment, this failure provides a convincing *disconfirmation* of the theory. Successful treatment, when theoretically informed, can only reasonably be regarded as *consistent* with the underpinning theory, which is helpful to know, provided all such studies are reported within the principles of open science (Frankenhuis and Nettle, 2018).

So, if theories cannot be built on the effectiveness of treatment, how can the theories which drive novel treatments or enhance existing ones be developed? The answer is through research which allows the identification and evaluation of modifiable processes involved in the maintenance of the problems involved, with appropriate controls in place, and ultimately

subject to experimental test. Thus, treatment development in BT and CBT has focused on factors which *maintain* clinical problems. We note that the past 50 years have seen no significant development of our understanding of *causal* factors in mental health problems. There has been some progress in identifying *risk* factors (e.g. Brander *et al.*, 2016), but mostly these are not readily modifiable and cannot be regarded as causal. Our inability to identify causality probably stems from the fact that the problems we see are the outcome of a range of convergent processes which have specific outcomes. Most likely, the mental health difficulties people experience are exaggerations of one or more otherwise normal processes and difficulties (e.g. Beck and Haigh, 2014; Beck, 2019; Clark, 1999). For example, social anxiety is an almost universal problem early in life, in the form of shyness with greater or lesser impacts. However, for some people such anxiety becomes cripplingly severe and persists over time, where for most people it decreases to manageable levels or dissipates entirely. Similarly, for depression, low mood is universally experienced, for example following bereavement, but for the clinically depressed person their mood problems have become sufficiently severe and persistent as to cause significant impairment of day-to-day life over prolonged periods.

Research in CBT has made very significant advances in understanding factors involved in the maintenance of psychological problems through a combination of comparisons of key measures across and within groups of people experiencing specific or general problems and experimental studies in which the hypothesised factors are systematically varied to test specific predictions. Such research can inform both theory and clinical practice, allowing the development of novel aspects of treatment which can then be evaluated in randomised controlled trials. Such research can include very precise laboratory investigations which seek to dissect an aspect of psychopathology in ways related to the phenomenology of the problem (Canvin *et al.*, 2016; Clark and Teasdale, 1982; Wild *et al.*, 2008) through to field experiments in which the controls are less precise but ecological validity is built in (Rachman *et al.*, 1976; Salkovskis *et al.*, 1999). This type of strategy has been described in considerable detail elsewhere (Clark, 1999). Research methods such as in examination of individual differences, epidemiological studies, qualitative studies and quantitative studies can also make important contributions to improving our understanding of how therapy outcomes can be made more efficient in terms of extent and speed of improvement obtained for comparable or less time invested. There is however a trap, summarised by Jones (2006) as ‘We don’t know how to measure all the environmental effects that impact on our lives, or we would. The danger lies in attributing too much significance to something just because you can measure it’. This is particularly evident in the failure of work on neuroimaging to generate any useful findings contributing to the understanding of mental health problems (Lilienfeld *et al.*, 2018; Nour *et al.*, 2022; Satel and Lilienfeld, 2013; Vitacco *et al.*, 2020).

This interplay described above between theory, practice, outcome research and research into the nature of mental health problems is of course neither disorder nor theory specific, but it is the adoption of these connected strategies which has resulted in cognitive and behavioural approaches leading the field in psychological treatments. In terms of the future development and dissemination of effective psychological therapies, we consider that the incorporation of the experience of those we try to help in terms of the choice of intervention is now crucial. To empower those who seek our help, we consider it to be a moral (and practical) imperative to facilitate ‘evidence based patient choice’, a type of shared decision making. Such an approach means helping patients to access a range of information according to their preferences, taking account of their value system. Promotion of evidence-based Clinical Guidelines, such as those produced to be accessible by NICE in the UK are one possible pathway to achieving such shared decision making, but again the broader notion of empirical grounding is also needed where the evidence is scant.



## Treatment development

According to Clark (2004) development of effective CBT for particular mental health problems is characterised by six steps:

- (1) Talk to people suffering from a particular mental health problem about their experience of their difficulties. The phenomenology can then be expanded through the use of cognitive psychology strategies and clinical interviews to identify core cognitive abnormalities characteristic of that problem.
- (2) Develop a theoretical account (which should be capable of informing case conceptualizations) that explains why the cognitive abnormality does not self-correct or even accelerates. Note that the key here is hypothesised maintaining factors rather than causal notions.
- (3) Test out these hypothesised maintaining factors (based on the theoretical account in step 2) under controlled experimental conditions.
- (4) Develop cognitive treatment that reverses or diminishes the maintaining factors mentioned in steps 2 and 3.
- (5) Test the efficacy of the treatment using research strategies which provide some degree of control over threats to validity.
- (6) Disseminate this treatment mentioned in step 5.

The development of CBT involves a flexible process involving the interplay between understanding our patients' phenomenology and our own theory building focused on maintenance factors, then empirically testing this theory in experimental studies which further inform treatment development and refinement. Although not necessarily confined to CBT amongst psychotherapies, this has largely been true over the last 50 years.

## Randomised controlled trials are important, but not the only show in town

As can be seen from the discussion above, a variety of methods are used to demonstrate MOCs, with randomised controlled trials (RCTs) being only one of many methods, and in these terms not the gold standard. If RCTs are not king, how does they fit into the range of strategies deployed in psychological treatment research? An overview of possible methods and their interplay in psychological research can be seen in Fig. 2.

Historically, behavioural, cognitive and cognitive-behavioural approaches were initially attempted with problems that were regarded as difficult or even impossible to treat ('treating treatment failures'; Emmelkamp, 1987), so trying out new psychological approaches was regarded as a win-win strategy. In the UK this led to early behavioural treatment of problems such as OCD and the deployment of the Token Economy in chronically hospitalised and institutionalised schizophrenics. Developing treatments for 'treatment failures' (Otto and Hofmann, 2010) became something of a pattern in BT and then CBT which continues to this day. As indicated in Fig. 2, initially, case studies simply describing effective treatment applied to mental health problems previously believed to be untreatable are important. This progresses to single case experimental designs (SCEDs), where more precise and regular measurement allowed valid attribution of improvement to the interventions deployed. Note that this strategy was initially taken from Shapiro's principle of the intensive investigation of the single case and behaviour analysis (Barlow and Nock, 2009; Shapiro, 1961). Having clearly shown effectiveness in a SCED, this progresses to consecutive SCED series. Larger scale 'open trials' can follow, leading ultimately to RCTs. RCTs are difficult and expensive to conduct unless they can be embedded in services where routine outcome monitoring is built into the service specification (as in NHS Talking Therapies for Anxiety and Depression). Note that, in the hourglass model used here, it may be that the

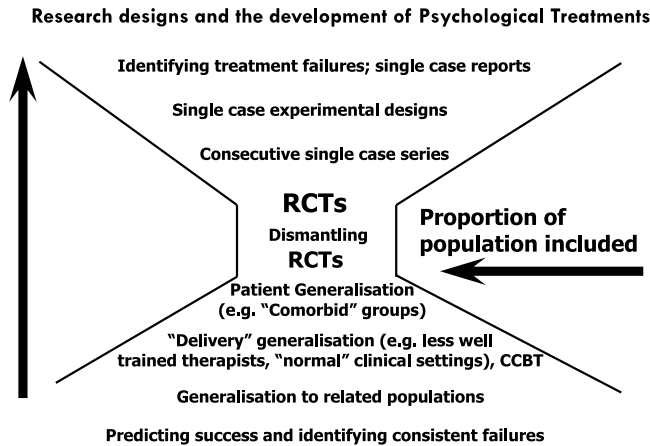


Figure 2. Research designs and the development of psychological treatments.

generalisation to 'routine clinical populations' is limited. However, this is not necessarily so, given that one of the commonest reasons for exclusion from trials is low severity and chronicity. Generalisability of treatments from RCTs tends though to be robust (e.g. Lutz *et al.*, 2016; Wilson, 1998).

Once treatment effectiveness is established, *dismantling* RCTs can be used to identify active ingredients of treatment. Generalisation studies of various types can then progress things further, to include a wider range of the same population or other populations with similar types of problem. Even in RCTs, attention to individual response is important, not least because it can help identify those who do and do not benefit from treatment. This of course can lead to the systematic identification of treatment failures, who if treated begin the whole process again by the use of single case work.

### Does research lead to a better understanding of mechanisms of change?

The history of the development of CBT has focused on at least two strands. Firstly, the development and refinement of treatment strategies, mostly on a pragmatic basis. The second has been investigation of the *targets* for such therapeutic interventions, varying from disorder specific through to transdiagnostic factors. Thus, the emphasis has been on techniques to bring about change and to understand how best to focus such techniques. These strategies have only tangentially touched on MOC. Although the evidence for the effectiveness of both disorder-specific CBT and transdiagnostic CBT has been established definitively (Fordham *et al.*, 2021; Newby *et al.*, 2015), the mechanisms of change remain poorly understood leaving open the question of which interventions are helpful and which are not (Kazdin, 2007; Lorenzo-Luaces *et al.*, 2015; Murphy *et al.*, 2009). The main reasons given for this are:

- (1) Emphasis on efficacy studies in the CBT literature.
- (2) Lack of statistical procedures to demonstrate the relationship between independent and dependent variables.
- (3) Near total absence of studies that establish the timeline of changes where causality of changes is shown.
- (4) Failure to identify if CBT specific interventions lead to greater symptom change compared with general interventions like the therapeutic relationship (Kazdin, 2007; Lemmens *et al.*, 2016; Lorenzo-Luaces *et al.*, 2015; Lorenzo-Luaces and DeRubeis, 2018; Nock, 2007).



However, data are accumulating in support of some specific hypothesised mechanisms for individual anxiety disorders and depression (disorder specific) (Donegan and Dugas, 2012; Hedman *et al.*, 2013; Hofmann *et al.*, 2007; Kleim *et al.*, 2013; Lemmens *et al.*, 2021; Wilhelm *et al.*, 2015).

### Effects of specific interventions versus common factors

Although mechanism of change should *necessarily* manifest in the occurrence of common factors in therapy, common factors *do not necessarily* reflect mechanisms of change. For example, therapists typically wear shoes in almost all therapy modalities, making it a common factor but probably not a mechanism of change. There are 16 (and counting) current schools of psychotherapy with different hypothesised MOC, be it treatment specific or general ones (Prochaska and Norcross, 2018). Unfortunately, there is little theoretical or empirical consensus as to whether specific factors, common factors or a combination of both are part of the mechanisms of change in psychological therapy in general (Cuijpers *et al.*, 2019; DeRubeis *et al.*, 2005; Hatcher and Barends, 2006; Lorenzo-Luaces *et al.*, 2015). The literature tends to be rather muddled in this respect, with the assumption, for example, that because the therapeutic alliance is commonly considered to be important across psychotherapies, it is a MOC (Ahn and Wampold, 2001). It is possible that it could be the other way around, i.e. that common factors (such as therapeutic alliance) are incidental to other MOCs, changing as a consequence of improvement rather than driving it. If someone improves, they are likely to feel more agreeable towards their therapist (and *vice versa*) than if they do not.

In CBT research, this has caused some to doubt the role of reappraisal of negative or threat-based thinking as a MOC in CBT (Craighead *et al.*, 2005; Kazdin, 2007; Longmore and Worrell, 2007). The main arguments against change in negative or threat-based thoughts as a MOC are: (1) component analyses of cognitive therapy vs non-cognitive therapy have failed to show added effects of cognitive interventions in treatment; and (2) symptom reduction starts before cognitive interventions are introduced in cognitive therapy (Ilardi and Craighead, 1994; Jacobson *et al.*, 1996; Kazdin, 2007). The conclusion is therefore that non-cognitive factors may cause symptom change in CBT. We suggest that this needs to be considered in a more nuanced way, as described below.

Lorenzo-Luaces and colleagues (2015) are one of the few research groups that have addressed this complex question. They argue that the question is not only whether cognition leads to diminished symptomology but also how this cognitive change takes place, how fast and in what environment. They proposed four guiding questions when evaluating cognitive change as a MOC in psychological treatment:

- (1) Do cognitive change procedures cause more reduction in symptomology of emotional problems compared with other change procedures?
- (2) Do cognitive change procedures cause more change in negative and/or threat-based cognition compared with other change procedures?
- (3) Does cognitive change (independent of what change procedures are applied) cause diminished symptomology of emotional problems?
- (4) Do cognitive change procedures cause cognitive change, but only when these specific procedures are implemented but not others?

Lorenzo-Luaces and colleagues only found three studies that evaluated these four questions but also simultaneously evaluated temporality of changes and other confounding variables (DeRubeis *et al.*, 1990; Evans *et al.*, 2013; Kuyken *et al.*, 2010). According to Lorenzo-Luaces and colleagues the following question: 'Does cognitive change (independent of what change procedures are applied) cause diminished symptomology of emotional problems?' is the primary test of whether

cognitive change is a mechanism of change in cognitive therapy for various emotional problems. They argue (and provide data) for the view that cognitive change is in fact the mechanism of change in CBT. They also argue that this cognitive change might arise from different mediating pathways, and that it is irrelevant how this cognitive change is acquired, i.e. irrespective of which of the interventions implemented cause this cognitive change. Similar arguments have been put forward by Beck himself (Beck and Haigh, 2014; Beck and Dozois, 2011).

### Various concepts for different but helpful processes in psychological treatment

Sauer-Zavala *et al.* (2017) published an article to clarify the literature concerning treatment specific processes *vs* transdiagnostic processes *vs* common factors. According to them, it is helpful to divide MOC or processes into three categories: universally applied therapeutic principles, modular interventions (in modular treatments), and finally, shared mechanisms in transdiagnostic treatment.

#### **Universally applied therapeutic principles**

Some argue that, where differences in efficacy are in some doubt (the so-called ‘Dodo Bird Verdict’) then the answer to more effective and efficient therapy must lie in the identification of ‘*common factors*’. The ‘contextual model of common factors’ is said to apply to a broad range of emotional problems (Wampold, 2015). Interventions in this group are described as ‘top-down’ procedures that are applied to a diverse range of emotional problems without requiring or even considering whether these emotional problems are maintained by the same or similar processes, and therefore these approaches are ‘one size fits all’. Accordingly, this is an argument for non-technical transdiagnostic approaches.

#### **Modular interventions**

A rather different approach in transdiagnostic treatment is the modular approach or the common element treatment approach. Using modular treatment allows the therapist to develop treatment tailored to each participant suffering mental health problems using an ‘intervention bank’ or ‘buffet of interventions’ (Chorpita *et al.*, 2004). This echoes the older concept of ‘technical eclecticism’ as can be seen in the unified protocol (Barlow *et al.*, 2017).

#### **Shared mechanisms**

Interventions in this category target common underlying mechanisms across a range of mental health problems or shared mechanisms and are therefore guided by theory about the psychopathology of these emotional problems. These kinds of mechanisms were first defined by Harvey *et al.* (2011), who argued that shared mechanisms in transdiagnostic treatment can be divided into descriptive transdiagnostic processes *vs* mechanistic transdiagnostic processes. To clarify the difference, descriptive transdiagnostic processes are processes that are seen in many emotional problems without any shared functional role in their development or maintenance. An example of this is low self-esteem, seen in many emotional problems even though it does not share a functional role in these problems. Mechanistic transdiagnostic processes are those that maintain at least two distinct emotional problems such as pre-occupation with shape and weight in different eating disorders (Fairburn, 2008). Salkovskis and Forrester (2002) differentiate between ‘disorder specific’ and ‘disorder relevant’ factors, which of course carries the implication that there are ‘disorder irrelevant’ factors in theory and therapy.

## The core mechanism in effective psychological therapy?

Decades of psychological research in mental health problems leads to a very specific conclusion regarding the *nature* of such problems, which is that people experience mood problems because they interpret their situation as being more negative or threat-based than it really is. The nature and focus of such an interpretation will determine not only its emotional impact, but also behavioural and cognitive changes driven and motivated by the exaggerated negative meanings. Such changes have the effect of maintaining the negative meanings, so that the person becomes 'stuck' in a counterproductive way of understanding and reacting to what is happening to them. For understandable and definable reasons, they become inflexible in the way they respond.

If this is so, then it is reasonable to suggest that what any *effective* therapy does is to help the person identify and consider alternative, less negative explanations of their situation and their reactions to that situation. That is, good therapy is about empowering the person to understand better *how the world really works*. In doing so, the person is helped to become more *psychologically flexible*. That is, the person who has attached a particular meaning to their experience is helped to begin to consider other meanings, which may have quite different implications for how they react. Note that the emphasis here is not on the idea that person should think more rationally or logically; just that they should be able to understand and weigh different perspectives on what they are experiencing. It is important to note that, for the person to give proper consideration to helpful alternative explanations, they have to meet at least two criteria. Firstly, they have to fit with the person's past experience, and secondly, they need to measure up when actively tested; that is, they also have to *survive the person's future experience* either incidentally occurring or as exploratory exercises agreed in therapy, such as behavioural experiments.

Well-conducted CBT measures up extremely well to these requirements. Formulation based and driven CBT requires that the formulation (here, the emerging alternative explanation) be derived from a careful and collaborative understanding of the person's actual experience where the person's experience and the formulation are perfectly aligned. The CBT therapist working with the person to derive a formulation draws upon their (empirically grounded) understanding of how that person's particular problem can be maintained, matching this to the specific patient's lived experience; for example, in panic attacks, through the particular focus of negative meanings, such as catastrophic misinterpretations of bodily sensations in panic attacks and the safety-seeking behaviours which the person uses to deal with their particular feared consequences (see detailed description of case formulation for panic attacks in Clark and Salkovskis, 2009).

The use of eliciting information and discussion of the derived formulation helps the person to begin to evaluate the less threatening explanation alongside the negative beliefs that are driving their distress. Where information the person is able to identify from their past experience is insufficient to support the alternative account, then the person is encouraged and empowered to gather new information, for example by the use of behavioural experiments ('don't trust me, find out for yourself'). The results of such behavioural experiments are then fed into the discussion and directly linked to the evolving formulation, and may indeed modify it. In this way, behavioural and cognitive strategies are fully blended in the service of helping the person to understand how their problem works and how it can be resolved or otherwise diminished.

At its simplest, this can be described as contrasting 'Theory A' with 'Theory B'. Theory A describes the negative meanings driving their psychological problems; for example, in OCD, the father who believes that his intrusive thoughts regarding harming his baby son means that he is dangerous to his family, leading to both avoidance and neutralising to both prevent harm occurring and to ensure that he has done all in his power to make sure that this is so. As part of formulation, Theory B is identified, which is that, as a loving father, he is experiencing intrusive thoughts which he understandably has misinterpreted as meaning that he is a danger to his much-loved son, which has then led to safety-seeking behaviour which he erroneously believes has prevented harm. The person can then be helped review the implications of each perspective and

how each of these implications fit with his past experience. In the formulation, attempts to rid himself of his thoughts completely (and other safety-seeking behaviours) are identified as possibly involved in maintaining his difficulties. He is then invited to test the impact of thought suppression in the therapist's office, then at home. He is then asked what can he learn from doing this? What scenario (suppressing a fearful disgusting thought *vs* letting it go) is most consistent with 'Theory A' or 'Theory B'? (see detailed description of development of 'Theory A' *vs* 'Theory B' for OCD in Bream *et al.* (2017), and how this integrates with exposure and response prevention in OCD).

We note that purely technical implementation and development of 'Theory A' *vs* 'Theory B' is not enough, however. A crucial component of such an approach (and we think crucial to being able to activate this MOC) is the atmosphere of therapy, which emphasises the idea of a collaboration of two experts; that is, the 'expert' therapist as someone who has a good empirical understanding of psychological problems (but who knows very little about their patient's experience), and the patient, who has an excellent understanding of their life and the problems they are experiencing. Good therapy therefore involves the collaboration of these two experts in understanding how the problem (and the world) works and therefore the kind of things which might alleviate and/or eliminate it and allow the person to reclaim areas of their life which have been previously impaired by their psychological difficulties. We therefore believe that therapeutic alliance is highly important, but only when combined with implementation, development and testing of 'Theory A' *vs* 'Theory B' and other CBT specialists concur with our assertion (Kazantzis *et al.*, 2018).

We also assert that from a theoretical standpoint this MOC applies to all effective psychological therapies (see below), but that formulation-based CBT is particularly powerful in tapping into it. An important factor is the extent to which the theory or theories guiding a therapist in their efforts to bring about psychological flexibility are well founded and have implications for ways of evaluating the alternative understanding. Purely 'insight'-focused therapies meet part of the requirements set out, presuming that they draw on the person's experiences (which they do not always do), but typically do not address the issue of actively evaluating the validity of the formulation which constitutes Theory B. We take the view that it is important to avoid 'Trust me, I'm your therapist' and instead adopt the more flexible approach of 'Don't trust me on this, instead work with me to find out how things work for you'.

The primary focus in CBT is therefore on building and evaluating Theory B. Sometimes it is also possible to bring about a disconfirmation of Theory A (as in several anxiety disorders). Note, however, that identifying the formulation prior to disconfirmation is helpful both in terms of making it possible for the person to engage in disconfirming behavioural experiments and then to integrate what they have learned from disconfirmation experiences and thereby generalise them. Interested readers are directed to Bennett-Levy *et al.* (2004), Bream *et al.* (2017); Clark and Salkovskis (2009), Salkovskis (1996) and Sighvatsson *et al.* (2021) for a more detailed description of this process.

It seems likely that effective therapies that do not have such a focus implicitly develop alternatives, and it is the development of more flexible and less negative meanings which accounts for therapeutic change. How about explicitly behavioural approaches, such as exposure as deployed so effectively in phobias? The proposal here is that, although not explicitly targeted in therapy, the success of such approaches requires the patient to discover and shift to an alternative, less threatening understanding of their problem. If an agoraphobic is simply supported to repeatedly confront the situation where panic attacks typically occur, prolonged repetition can result in them realising that the things they fear don't happen, and that their problem is in fact one of anxiety and avoidance rather than being rooted in the catastrophic consequences they fear. Repeated experiences allow them to shift to an implicit Theory B. Note that the development of the cognitive model of panic occurred in the context of the observation that habituation to avoided situations was typically dissipated by the occurrence of panic attacks (Matthews *et al.*, 1981) and

such experiences adversely affected expectations and negative thinking (Rachman, 1991). Even more persuasively, it has been found in both agoraphobia (Salkovskis *et al.*, 1991; Salkovskis *et al.*, 1999) and in social phobia (Wells *et al.*, 1995) that exposure presented as behavioural experiments designed to disconfirm threat beliefs was very markedly superior to exposure alone. Similar principles can be considered with respect to approaches such as behavioural activation; the key question in cognitive behavioural therapies should be ‘what is it that the person learns when they undertake psychotherapy?’. The fact that increasing activities gives the person a sense of mastery and pleasure is likely to shift them from the Theory A perspective shift (e.g. ‘My life is meaningless and not worth living’ to the alternative ‘I feel hopeless because I am not doing enough to give my life meaning’ can be generated by behavioural changes and result in a shift from a ‘stuck’ negative perspective to a more flexible perspective on the reality of the person’s world.

For other forms of psychotherapy, we propose that similar processes apply. Pretty much by definition, a person seeking help for mental health difficulties presents as being stuck in a problematic view of their situation, typically convinced that they are unable to manage what is happening to them and/or who they are. The act of seeking help from mental health services means that the person already has an implicit and often ill-defined Theory B in play (‘Maybe this is a psychological problem?’). In this context the account offered by a health professional who at least appears to be listening has the potential to enhance the person’s understanding (‘I feel this way because . . . of my childhood experiences . . . my inner conflicts . . . trauma I experienced . . . a biochemical imbalance . . .’). All psychological therapies are underpinned by a more or less explicit Theory B, and it is in the nature of the evolution of psychotherapies that those available to each will be likely to have some approximation to the person’s past experience, so meeting one of the criteria for a credible Theory B. The extent to which they then stand the test of experience will vary, and some psychotherapies explicitly indicate that for example the person’s symptoms will not be helped by therapy, but that some more profound change may take place over a protracted period of time. Each psychotherapy will incorporate more or less impactful elements, strategies and techniques aimed at achieving psychological and/or behavioural change; the perceived success of such strategies will tend to reinforce (or undermine) the believability of the alternative explanation which the particular therapy deploys. Note that the more empirically grounded a particular therapy is (that is, effective in achieving its stated aims and fulfilling its predictions), the more the person will be convinced by the alternative explanation.

### **A voyage of discovery: understanding the role of cognitive change, behavioural experiments and therapeutic alliance**

Clinical practice is both the target of our work and a rich source of information and inspiration which drives other aspects of the process of empirically grounded clinical approaches. By seeking to understand individuals’ personal stories and their experiences of psychological difficulties, the clinician and researcher alike should be able to form an understanding of the key processes. Sometimes, this understanding may generalise to others with the same or different difficulties. This understanding can be used to generate and apply theory to problems where common processes cut across different presentations. Clinical understanding and theory may also inform the focus of outcome research by suggesting the type of interventions which should be used and which process and outcome measures are likely provide the best information. Taken together, CBT therapists’ main goal should be to alleviate our patients suffering, therefore no matter what CBT therapists do, be it as a scientist or practitioner, your job is to devise an individually tailored treatment that helps your patient to understand how their world really works. We propose that the core mechanism of change involves supporting this understanding through the explicit identification of the problematic negative meaning (‘Theory A’) and its contrast to the shared understanding collaboratively developed as part of formulation (‘Theory B’). The therapeutic

alliance is necessary insofar as it facilitates the development of a *shared understanding* about how the world really works, but it is not sufficient to engender the necessary psychological flexibility in terms of meaning making. Ultimately, the aim of psychological therapy is then to enable the change in perspective on themselves and their problems to lead to the person being able to respond (behave) more flexibly in ways which help them to reclaim key aspects of their self and life. Good psychological therapy helps people to make the transition from vicious circles which trap them to adapted self-maintaining patterns of meaning making and flexible behavioural responding.

### We have a problem!

Evaluation of MOC in psychological treatment can be both fruitful (if mechanisms are found), but also at the same time demanding, time-consuming and difficult (Doss, 2004; Kazdin, 2007; Kraemer *et al.*, 2002; Lorenzo-Luaces, 2023; Lorenzo-Luaces *et al.*, 2015). Why is this so? Earlier in this paper, four reasons were provided which offer an agenda for doing things better (Lorenzo-Luaces, 2023; Lorenzo-Luaces *et al.*, 2015; Lutz *et al.*, 2021; Nock, 2007; Tolin *et al.*, 2023):

- (1) We should promote the measurement of MOC alongside the evaluation of treatments efficacy (e.g. Kazdin, 2007; Murphy *et al.*, 2009).
- (2) Apply statistical procedures to demonstrate the relationship between independent and dependent variables (e.g. Kazdin and Nock, 2003; MacKinnon *et al.*, 2002), taking into account improvements in methodological and statistical procedures in MOC research (Baldwin and Goldberg, 2021; Lutz *et al.*, 2021).
- (3) To identify if CBT-specific interventions lead to greater symptom change compared with general interventions like the therapeutic relationship as mentioned above (Kazdin, 2007; Lemmens *et al.*, 2016; Lorenzo-Luaces *et al.*, 2015; Lorenzo-Luaces and DeRubeis, 2018; Nock, 2007).
- (4) Prioritise studies that establish the timeline of changes where causality of changes is shown.

This is a major problem for psychotherapy process studies (see for example in Feeley *et al.*, 1999; Lemmens *et al.*, 2016; Lorenzo-Luaces *et al.*, 2016; Webb *et al.*, 2012); when both process and symptom measures are evaluated typically correlation between these variables rather than temporal precedence is assessed. Kazdin (2007) proposed helpful guidelines to demonstrate temporality of changes in psychological treatment, *viz*:

- (1) Data have to show that the treatment causes the proposed mediator variable to change, which consequently causes the outcome (diminished symptomology), but not the other way around. The only way to achieve this is to evaluate process and symptom measures multiple times during treatment (e.g. Collins and Graham, 2002; Johansson and Høglend, 2007; Kazdin and Nock, 2003; Kraemer *et al.*, 2002; Lemmens *et al.*, 2016; Murphy *et al.*, 2009).
- (2) Demonstration of specificity of the mediator–outcome relations under study, but not others.
- (3) Rule out other mediator–outcome relations. This can only be done in strict experimental conditions.
- (4) Divergent and multiple evaluations of mediator–outcome relations (consistency).
- (5) Demonstration of gradient effect (greater activation of the hypothesised process causes greater change in symptom measures).
- (6) Data collection has to be performed from multiple sources.



## Where should we go from here?

We strongly encourage researchers to follow the guidelines put forward by Kazdin (2007). As can be clearly be seen in Lorenzo-Luaces (2023) and Lemmens *et al.* (2016), the literature is far from reaching that goal. It is no longer sufficient to exclusively evaluate symptoms and process measures pre–post treatment. Alternative technologies such as sudden gains research are also promising (Tang and DeRubeis, 1999). This is a matter of behaviour change in the research community and if one thing is what we should be good at, it is gaining cognitive flexibility and changing behaviour. We have all kinds of methods and statistical procedures to evaluate this like multi-trait-multi-method approaches, item response theory approach, bi–factor model approach in factor analysis or network analysis to name a few (Lutz *et al.*, 2021). To follow this requirement also calls for a changed behaviour in when we evaluate process and symptom measures. New technology like ecological momentary assessment might be used more often instead of the traditional method of having our patients answering with paper and pencil at the treatment site. If we look at the second and third requirement (demonstration of specificity of the mediator–outcome relations and rule out other mediator–outcome relations) the only sensible way to evaluate this is under strict experimental conditions. This has been done and replicated in emotion regulation studies (Gross, 1998; Gross and John, 2003; Webb *et al.*, 2012); why not CBT? If we look at the final requirement (data collection from multiple sources), a number of methodological procedures are available as a substitute of RCTs; to name a few: qualitative methods (Levitt *et al.*, 2021), experimental, randomised, non-randomised and mixed methods (Baldwin and Goldberg, 2021) and finally single case experimental designs (Barlow and Nock, 2009).

## Conclusion

The effectiveness of psychological therapies for a range of psychological issues has been established beyond doubt. This has been achieved in the context of an applied science, where the science is theoretically driven and its application, although harder to define, is empirically grounded and person-centred. That is, good psychological therapy involves a skilful blend of clinical art and clinical science. The aim of such good therapy is, as far as possible, to work collaboratively with the person we seek to empower them to examine their situation in a flexible way in order to understand *how their world works*. It is not about fostering positive thinking regardless, and is often about how to manage best in difficult circumstances through identifying where psychological flexibility has been lost and how some flexibility might be restored. CBT and other therapies need to build such considerations into their evolution in order to serve better those who seek our help.

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