

Show us a behaviour without a cognition and we'll show you a rock rolling down a hill

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Abstract. Dismantling studies are used in psychotherapy in order to understand the important components of treatment. Typically, this has occurred so that people could understand the unique contributions provided by cognitive *versus* behavioural techniques. Recently, mindfulness-based approaches have apparently added a third dimension to the dismantling enterprise. Dismantling is seen as an important way of understanding the change process in psychotherapy and, therefore, clarifying how we might most effectively promote change. The way in which an entity is dismantled, however, exposes assumptions about the nature of the entity and its organization. In this paper we argue that dismantling studies in psychotherapy have perhaps generated more confusion than consensus and have provided little practical benefit for clinicians. We suggest that the phenomenon of control might provide a unifying perspective from which to approach the integration of behavioural, cognitive, and mindfulness approaches. In one sense all these seemingly different approaches are doing the same thing and it is this 'thing' we highlight in this paper.

Key words: Cognition, cognitive behaviour therapy, control, mindfulness.

Introduction

How do behavioural, cognitive, and mindfulness approaches achieve their effects? Do they target different systems within an individual? These are surely important questions because if we were able to answer these questions with certainty we could be more confident as well as systematic in our efforts to promote change in psychotherapy.

This article begins by critiquing the argument that CBT works purely through behavioural change as specifically articulated by Longmore & Worrell (2007). Rather than review a broad and burgeoning literature that is available elsewhere (e.g. Hofmann, 2008), we take an approach that considers what the philosophy of science can offer and we appeal to the reader's common-sense awareness of the practice of CBT and related interventions. We focus initially on the distinction between behavioural and cognitive techniques because that reflects the weighting

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in the literature by number of publications; however, we also believe that the points being made are applicable to the purported distinction between established CBT approaches and the newer mindfulness/acceptance-based, or third-wave, methods.

Behavioural, cognitive, and mindfulness approaches

Within CBT, the addition of cognitive activities to behavioural therapies was initially seen as something of a revolution. The revolution, however, appears to have turned full circle recently with researchers questioning what cognitive techniques add in terms of improved therapeutic outcomes to behavioural strategies (Longmore & Worrell, 2007). The review article by Longmore and Worrell is the latest publication in a prolonged attempt to tease out the relative importance of cognitive *versus* behavioural activities. For example, a large study by Jacobson *et al.* (1996) compared a behavioural activation component with behavioural activation + automatic thoughts and behavioural activation + automatic thoughts + cognitive therapy. The behavioural activation component, however, included tasks requiring monitoring, assessing, assigning, and cognitively rehearsing. How could a task such as monitoring be conducted behaviourally without a cognitive element? Jacobson and colleagues seem to acknowledge this conundrum when they suggest that perhaps behavioural activation techniques 'are more effective ways of changing the way people think than treatments that explicitly attempt to alter thinking' (p. 303).

Longmore & Worrell (2007) seem to recognize this dilemma also. However, their suggestion is that future studies using 'purely behavioural interventions' (p. 184) may help to clarify important issues. While discussions of the behaviour of inanimate objects can occur without including cognitive processes it is not clear that the same can be said for living things. One could discuss, for example, the behaviour of a rock rolling down a hill without discussing the rock's planning or problem-solving abilities. Our suggestion, however, is that there is no way of discussing the behaviour of a person who accesses psychological treatment without considering that person's cognitions.

This proposal is not new. The difficulties inherent in separating the important experiential elements of psychotherapies were noted previously by Persons (1995). She argued 'all therapies can be seen as cognitive – but all therapies can also be seen as behavioural, biological, emotional, and interpersonal' (p. 185). Furthermore Persons claimed that none of these perspectives was more correct than the others. Earlier still, Latimer & Sweet (1984) had suggested that cognitive therapy was 'an evolutionary rather than a revolutionary development in the field of behaviour therapy' (p. 21) and that it was unique 'only in its greater emphasis on one class of behaviour-cognitions' (p. 21).

Despite the acknowledged difficulties with dissecting experience into separable components, history is in danger of repeating itself with the arrival of the third wave of CBT approaches in the form of mindfulness-based therapies. These therapies ostensibly offer a departure from conventional CBT approaches by focusing on attentional control through techniques designed to help people adopt a non-judgemental, more accepting attitude towards their problems. While noting that there is some suggestion that acceptance approaches might work through different mechanisms than standard CBT, Hofmann & Asmundson (2008) conclude that the evidence is too preliminary to make any firm conclusions. Moreover, Hofmann and Asmundson also

appear to suggest that the third wave might be more evolutionary than revolutionary with the difference being one of emphasis rather than kind.

Problems with dismantling

Research that delineates the relative contribution of different components of therapy uses what are known as ‘dismantling’ studies. Wampold (2007) argues that ‘The best experimental design for establishing specificity is probably the dismantling design, in which the one or two active ingredients are removed, leaving a legitimate, if degraded, treatment’ (p. 867). Marks (2002) observes that the value of this work has been questioned although he maintains that it is not futile. He suggests that lessons can be learned from negative findings and that as the science of psychotherapy matures, convergent experimental findings will allow us to ‘transcend ideological differences’ (p. 203).

The dismantling design rests on the assumption that active ingredients can be identified as separate and distinct. Thus, before something can be dismantled for greater understanding, boundaries must be demarcated about the most sensible places to make the dissections. With no clues from nature about where the lines should be drawn, the way the dissection is conducted reflects inherent assumptions of the dissector about the form and construction of the object.

Longmore & Worrell (2007) and Persons (1995) have demonstrated that the same thing can be dismantled differently. However, without an accurate understanding, of what is being dismantled, there is no way of determining the legitimacy of any particular taxonomy of component parts. Is Persons’ biological the same as Longmore and Worrell’s physiological? Could other components be added such as spiritual, motivational, and chemical?

At this point, we should explain that we are not criticizing the methodology of dismantling studies *per se*. Other methodologies can be used, such as single-case designs and additive designs, to separate the component parts of that which is being explored. Our issue is more conceptual rather than methodological with the argument being that it is conceptually problematic to attempt to delineate cognitive and behavioural processes as distinct and separate entities. Longmore & Worrell’s (2007) paper is cited as a contemporary example; however, we intend our comments to apply to any studies that are designed around the premise of identifying the independent contributions made by cognitions and behaviour. This problem applies not only to researchers but also to clinicians who are trying to apply the lessons learned from these research endeavours.

One solution to this problem may be to take a step back and consider the general difficulty in psychology of which dismantling studies are a specific case. In order to provide some practical guidance for clinicians we will consider the more general situation before returning, once again, to the specifics of psychotherapy.

A general and historical consideration

Longmore & Worrell’s (2007) paper illustrates the pervasiveness of two fundamental and interrelated themes that appear to have plagued the foundations of psychology since it first emerged as an independent discipline. The themes are the identification of what counts as phenomena, and the nature of causality.

Initially psychology was considered to be the scientific study of behaviour. Behaviour, however, has proven to be definitionally elusive. Unlike phenomena in the natural world such as magnetism, gravity, and lightning, behaviour does not seem to be a discrete phenomenon. What counts as behaviour at any point in time is determined by the interests and focus of the counter. As mentioned above for example, Latimer & Sweet (1984) consider cognitions to be a type of behaviour.

In many ways, behaviour is in the eye of the beholder, at least from a definitional perspective. A psychophysicist who has the advantage of a laboratory setting, is likely to count neuromuscular impulses as an index of behaviour, yet an ethologist who studies animal behaviour in the wild, is likely to count observable categories of behaviour (e.g. courtship, preening). It is difficult to discern whether one of these indices is more valid than another.

A starting point that is more fundamental than observable behaviour is that psychology deals with the study of *living* things. The process of living could be counted as a discrete phenomenon which is distinct from 'non-living'. Arguably, a fundamental characteristic of things that live is the ability to autonomously oppose environmental disturbances that would otherwise threaten their internal integrity. For example, Schrodinger (1944) claims that matter can be said to be alive 'When it goes on "doing something", moving, exchanging material with its environment, and so forth, and that for a much longer period that we would expect of an inanimate piece of matter to "keep going" under similar circumstances' (p. 25).

The 'doing something', to use Schrodinger's term, has traditionally been the output of the system for psychology. Typically, research has set about to discover the laws that relate inputs to outputs. The inanimate world can be described, for the most part, by lineal laws of cause and effect. When a rock is pushed – how far it moves depends on its mass as well as the force exerted on it. When a living thing is pushed, however, there is no certainty that it will move at all. It might move much more than was expected, it might push back, or it might snuggle in for closer contact.

John Dewey (1896) paved the way for this form of understanding by dismantling the humble reflex arc. He reasoned that the notion of stimulus and response was a flawed way of unpacking the reflex. According to Dewey:

the reflex arc idea, as commonly employed, is defective in that it assumes sensory stimulus and motor response as distinct psychological existences, while in reality they are always inside a coordination and have their significance purely from the part played in maintaining or reconstituting the coordination; and (secondly) in assuming that the quale of experience which precedes the 'motor' phase and that which succeeds it are two different states, instead of the last being always the first reconstituted, the motor phase coming in only for the sake of such mediation (p. 360).

Dewey felt that it was a mistake to analyse the reflex as a stimulus-response sequence because 'What we have is a circuit, not an arc or broken segment of a circle. This circuit is more truly termed organic than reflex, because the motor response determines the stimulus, just as truly as sensory stimulus determines the movement' (p. 363).

On the whole, Dewey's sage analysis went unheeded, however, and, borrowing the methodology of the physical sciences, an industry of psychological research developed based on the idea of linear cause and effect. Research designs using independent and dependent variables or predictor and response variables speak directly to the linear model. Later, more complex models that incorporated different and multiple pathways and sometimes feedback loops preserved the basic input-output structure.

Even at a cellular level it seems hard to appreciate the ‘livingness’ of the entities being investigated. For example Stewart (1995, p. 171) remarks: ‘If you watch a single-celled creature under a microscope, the most amazing thing you see is the apparent sense of purpose in the way it flows. It really does look as if it knows where it is going. Actually, it is responding in a very specific way to its environment and its own internal state.’ Scott (1995, p. 71) seems similarly intrigued: ‘The humble neuron, in a sense, emerges with what almost appears to be a mind of its own. Sometimes, for reasons not yet clear, it fires predictably, dependably. But on other occasions, quixotically, it pauses or elects not to fire, sitting quietly, marshalling chemical and electrical resources for release later.’

However, even at the macroscopic level research that investigates the predictors of behaviour predominates. Whether the predictors are identified in the external environment or the internal processes the search for the causes of particular behaviour patterns remains constant. It is in this sense that living things are being studied as though they were inanimate input–output devices.

Control: the phenomenon we have been looking for

Our current understandings might be enhanced by breathing life back into psychology and recognizing the seamless and continual way in which living things vary their behaviour to protect their internal environments from unpredictably changing external environmental forces. The process of varying output in order to prevent variations in input is known as *control*. Autonomous control can be considered the process of living and can be identified from very basic processes such as maintaining a constant body temperature to much more complex ones such as maintaining an intimate relationship. Mansell & Carey (2009) outline the importance of control to psychotherapy in more detail but a moment’s reflection will reveal that control is *central* to psychotherapy. People come to psychotherapy because they have trouble controlling their thoughts or their behaviours or their emotions. Psychotherapy can be considered successful when people feel more ‘in control’.

For systems that control it is their perceived outcome of the behaviour, not the behaviour itself that is important (Powers, 2005). A schoolteacher, for example, controls the noise level in the classroom (an auditory input) by monitoring, praising, reminding, frowning, pointing, and relocating (behavioural outputs).

Psychology might find a new lease of life by adopting the phenomenon of control as a guiding principle. Some of this work has already started and, when simulations are conducted to test the hypotheses being proposed here, the correlation between the simulated behaviour and the actual behaviour is usually in the high 0.9’s (e.g. Bourbon, 1990, 1996; Marken, 2001).

For some areas of psychology, realigning towards control phenomena would only be a slight shift in perspective. For many theories of self-regulation (e.g. Karoly, 1993; Carver & Scheier, 1998) the subtlety would be the recognition that behaviour is the means of self-regulation and not what is directly regulated; put simply, the regulating individual only has their own perception as guidance rather than a notion of what is deemed to be ‘behaviour’ by other people (Vancouver, 2005).

Within a control perspective, there is no clear dividing line between these elements. They are part of a functional, dynamic system. Take the simple example of the goal of catching a ball (Marken, 2001): our observable attempts (behaviour) to control our perception (cognition) of

the ball (environment) to reach our goal of the ball being caught safely (motivation) are carried out by our brains (biology) in a continuous fashion. In contrast, a rock rolling down a hill shows an observable behaviour but exhibits none of the integrated features of control that we would expect from a living being. Within the clinical domain, we need to ask what perceptual outcomes people are seeking to control (e.g. perceived comfort, security), and facilitate the way that they regulate and manage these processes, rather than trying to extract, measure and change people's behaviour.

The methods of research from a control perspective might not change dramatically from current research practices but the purpose of the research would change markedly. Rather than attempting to establish probabilistic relationships between independent and dependent variables, identifying the variables that people control would become important. The 'Test for the Controlled Variable' has been described in detail elsewhere (e.g. Runkel, 2005) and is a useful approach in this regard. Large-scale studies that reveal the average behaviour of a group of individuals under certain conditions would only be important as providing indicators or suggestions about what some controlled variables might be. Qualitative methods and detailed quantitative case-study approaches would become much more common as a way of exploring in detail the leads that the large-scale studies provided.

In this way, the life sciences may become more similar in focus to the natural sciences. It has been suggested that the power and precision of the natural sciences arose because of a focus on invariance or the common, fundamental underlying properties of seemingly distinct objects. As Galileo dropped and rolled various objects of different shapes and sizes he was looking for what was common in the way that they moved. However, the life sciences have, for the most part, concentrated on studying the variability of objects. From this approach they have used statistics to quantify and understand the differences. It could be argued, however, that fundamental laws will only be found by focusing on invariant properties that are common rather than the variable characteristics that separate individuals and groups.

From a control perspective, therefore, common properties would be of interest. Stiles *et al.* (2008), for example, demonstrated that although the number of sessions varied from 0 to 20 in a total sample of 9703 participants the 'mean pretreatment–post-treatment change was approximately constant' (p. 298). From a control perspective, the constant size of the amount of change would be of interest to learn more about rather than the variability in treatment duration. Another useful area of investigation would be the reasons for which people attend psychological treatment. Currently, there seems to be an implicit assumption that people wish to experience relief from the symptoms of their distress and clinicians proceed with treatment from this perspective. Clinical experience, however, indicates that people attend psychological treatment for many reasons. Some patients are obeying the directive of their General Practitioner, some want an explanation (often in the form of a diagnostic label) for their current experiences, some are attending because of the urging of a partner or other close relative, and so on. Developing methods for assessing the reasons that bring people along to treatment would assist in enhancing the efficiency of services.

At present, cognitive behavioural models are often tested through an experimental methodology or a prospective design, whereby one specific psychological factor is isolated, such as a tendency towards misinterpreting internal experiences. The research tests whether this factor is elevated in a certain patient group, and whether individual differences in this factor across a large sample correlate with their levels of symptoms or predict them over time (e.g. Clark *et al.* 1997; Mansell & Jones, 2006). A control perspective would encourage us to

reconceptualize these cognitive factors as processes that control perceptual variables and to consider them together as multiple parts of a dynamic system (that is already implicit within many 'vicious cycle' models of psychological distress). These interacting systems can then be modelled using computer simulations and compared to recorded data within individuals. For example, Mansell (2009) has conceptualized a cognitive model of problematic mood swings (such as characterize people with a diagnosis of bipolar disorder) in control theory terms so that its mechanisms can be specified in more detail, especially the utilization of imagery and memory in goal pursuit, and the control of physiological variables such as arousal. Future research should have the capacity to use this, and other models, to explore mood swings at a much finer level of detail within the individual.

The pervasiveness of control in models of psychological distress and treatment

As suggested earlier, psychological problems are fundamentally problems of control. Control, therefore, is a transdiagnostic concept (Harvey *et al.* 2004). People seek the assistance of a clinical psychologist, cognitive behaviour therapist, counsellor or other mental health clinician when they have difficulties controlling different aspects of their lives. Models of both general psychopathology and also specific disorders mention control explicitly.

While a review of the existing theories is beyond the realms of this brief review, a selection of examples illustrate the relevance of 'control' in our understanding of psychological distress (see Mansell, 2005, for a broader overview). Fear of loss of control over thinking, feelings and behaviour characterizes a range of disorders, including panic disorder, obsessive–compulsive disorder, generalized anxiety disorder and PTSD (Mansell, 2005). It appears that people strive to regain control in reaction to perceived loss of control. For example, an extreme need for control is regarded as the unifying process maintaining symptoms across the eating disorders (Fairburn *et al.* 2003). At a neuropsychological level, the brain regions associated with the control of attention and action are implicated in a range of disorders. For example, van Veen & Carter (2006) claim that problems in the functioning of a conflict–control loop are involved in obsessive–compulsive disorder and schizophrenia.

Given the centrality of control as a process involved in psychological distress it would seem important to develop an accurate understanding of the way in which this process occurs. Greater clarity with regard to the phenomenon of control might resolve current inconsistencies in the literature. Carey (2006, 2008), for example, describes the disruption of control by *conflict* as a common, transdiagnostic, factor in psychological distress and outlines a therapeutic approach which is designed to restore control when it is compromised (see also Emmons & King, 1988; Riediger & Freund, 2004). In essence, attempting to control the same experience in opposing directions (e.g. to feel more calm and more excited; to worry more and to worry less) is the source of the problem. In Carey's approach, therefore, restoring overall control over conflicting attempts to control a specific experience is seen as the solution to psychological distress. How does this relate to the view of an extreme need for control as a problematic process? By using theories of control, we are able to understand that it is not control *per se* that is the problem, but the way that people continue to try to control certain variables through specific means at the expense of others to the extent that it interferes with their lives (Mansell, 2005). Control theories propose that when psychological therapies like CBT work well, they help people shift awareness to higher levels of control so that they can manage and

balance the lower processes more flexibly. Spratt & Carey (2009) describe eight case examples where the concept of control was central to the formulation and treatment of the patients' problems.

In CBT, therefore, control is often recognized as an important component of psychological distress. It is less common, however, to consider control as the basis for how people live their lives, maybe because when things are running smoothly people are less aware of the natural process of control. The difficulties that Longmore & Worrell (2007) highlight in separating cognitive from behavioural components of CBT might suggest that we have been asking the wrong questions about how CBT works. Rather than attempting to decide where the effectiveness of behavioural strategies end and the effectiveness of cognitive strategies begin, perhaps it would be more helpful to investigate the way in which control is interrupted and the most efficient ways it can be restored. Thinking of problems from this perspective will enable clinicians and researchers to conceptualize problems in transdiagnostic terms and to focus on common processes and properties rather than idiographic characteristics.

Furthermore, focusing on control as a central phenomenon might assist in realizing Rosen & Davison's (2003) call for a focus on empirically supported principles rather than empirically supported practices. It seems defensible to suggest from this brief overview that the interruption of control may be an important component of psychological distress and its restoration an important feature of effective psychotherapies. Focusing on these principles more closely could assist in the identification of the most active ingredients of effective psychotherapies as well as possible impediments in instances when psychotherapy is less than effective.

For clinicians, a focus on control could have important implications for treatment. Allowing problems of control to be the guiding principle for treatment would assist with problem definition. Problems would only be relevant in therapy to the extent that this was an area in which the patient felt an insufficient degree of control. Treatment methods, therefore, would focus on understanding and improving the patient's control abilities in that particular situation.

Summary and conclusion

We have provided a focused critique of the widespread assumption that behavioural and cognitive elements of an intervention can be dismantled in a simple, or consensual fashion. More specifically, the goals that underpin behaviour are by most definitions 'cognitive' in nature. We suggest that the most recent attempts to try to dismantle mindfulness or acceptance-based components of a CBT intervention are similarly limited. In its place, we have illustrated how the process of control, which is critical to psychological function and dysfunction, utilizes the dynamic working components of motivation, cognition, behaviour, biology and environment in a way that cannot be dismantled in a meaningful fashion. In order to examine 'control' as a process, we need to entertain an alternative methodology in which clinicians and researchers make hypotheses about the variables being controlled by our patients, and the degree to which they interfere (or conflict) with one another, while treating the facets that are traditionally divided (i.e. behaviour, cognition) as essential components of a working, purposeful system. Future clinical accounts and empirical research will have the capacity to test the validity and utility of this approach.

Declaration of Interest

None.

Recommended follow-up reading

Hofmann SG (2008). Cognitive processes during fear acquisition and extinction in animals and humans: implications for exposure therapy of anxiety disorders. *Clinical Psychology Review* **28**, 199–210.

Hofmann SG, Asmundson GJG (2007). Acceptance and mindfulness-based therapy: new wave or old hat? *Clinical Psychology Review* **28**, 1–16.

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Learning objectives

After reading this paper people will be able to:

- (1) Understand the interconnectedness and overlap between behavioural, cognitive, and mindfulness/acceptance-based approaches.
- (2) Constructively critique the design of dismantling studies in CBT.
- (3) Appreciate the ubiquity of the phenomenon of control and the importance of a theory of control to developments in psychotherapy.
- (4) Maintain confidence in flexibly utilizing a range of CBT techniques from the first to third waves of CBT.