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An integrative mechanistic account of psychological distress, therapeutic change and recovery: The Perceptual Control Theory approach

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ABSTRACT

The exact nature and mechanisms of psychological change within psychological disorders remain unknown. This review aims to use a psychological framework known as Perceptual Control Theory (Powers, 1973, 2005; Powers, Clark, & McFarland, 1960) to integrate the diverse literature within psychotherapy research. The core principles of Perceptual Control Theory are explained, and key domains of psychotherapy are considered to explore how well they converge with these principles. The quantitative and qualitative empirical literature on the process of psychological change is reviewed to examine how it fits with predictions based on Perceptual Control Theory. Furthermore, the prerequisites for psychological change; client qualities, therapist qualities, the therapeutic alliance and the shifting of awareness, are also considered to examine their consistency within a Perceptual Control Theory account. Finally the strengths and limitations of a Perceptual Control Theory account in explaining the mechanism of psychological change are considered.

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Contents

1. Perceptual Control Theory . . . 250
 1.1. Control . . . 250
 1.2. Hierarchical organisation . . . 250
 1.3. Conflict . . . 250
 1.4. Reorganisation . . . 251
2. Explanations of change in a selection of psychological theories . . . 252
 2.1. Control . . . 252
 2.2. The importance of higher levels within a hierarchical structure . . . 253
 2.3. Becoming aware of conflict . . . 253
 2.4. Reorganisation of higher level systems . . . 253
3. Explaining empirical findings concerning the processes of change . . . 254
4. Evidence for factors involved in psychotherapeutic change . . . 255
 4.1. Client variables and control . . . 255
 4.2. Therapist variables and control . . . 256
 4.3. The therapeutic alliance and managing conflict . . . 256
 4.4. Shifting awareness in therapy . . . 256
5. Strengths and limitations of a PCT approach . . . 257
6. Summary and conclusions . . . 258
References . . . 258

This article is aimed at addressing a recurring question within psychotherapy research — what is the mechanism of psychological change? It uses a psychological framework known as Perceptual Control Theory (PCT) (Powers, 1973, 2005; Powers, Clark, & McFarland

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1960) to attempt to integrate the diverse literature within psychotherapy research. The article is organised into five sections. First the core principles of PCT are explained: control, hierarchical organisation, conflict and reorganisation. Second, a range of explanations of psychological change from the key domains of psychotherapy are considered to explore their common features and to examine how well they converge with the principles of PCT. Third, we examine whether the quantitative and qualitative empirical literature on the process of psychological change fits with the predictions based on PCT. Fourth, we review the essential prerequisites for psychotherapeutic change: client qualities, therapist qualities, the therapeutic alliance and shifting awareness, and examine their consistence with a PCT account. Finally, the strengths and limitations of a PCT-based approach to understanding psychological change are presented, including the proposal that it may not be mutually exclusive of other explanations, but provide a 'greater magnification' of detail in its explanatory power.

1. Perceptual Control Theory

Perceptual Control Theory is a self-regulatory framework based on control system engineering which provides an integrative theoretical account of human behaviour. It has informed the development of contemporary self-regulatory approaches within psychology (Carver & Scheier, 1982; Karoly, 1993; Vancouver, 2005). The theoretical principles of PCT can be applied across both normal psychological functioning and across a range of psychological disorders. For PCT, there are four key principles of human functioning and behaviour; *control*, *hierarchical organisation*, *conflict* and *reorganisation*, each of which will be explained below.

1.1. Control

According to PCT, at the heart of living organisms is the process of *control* — keeping a variable within fixed limits despite outside disturbances (Mansell & Carey, 2009). Put simply, life is control — a continual process of making our experience 'just right' or how we want it to be. For example, we have a standard for how warm we want to be, a standard for how close we like to stand to other people, for what level of arousal we prefer, etc. We might perceive (e.g. a low level of arousal), compare it to a goal for that experience (e.g. a high level of arousal), and we act to change our perception to reach the goal (e.g. drink a caffeinated drink). Therefore, life is a constant process of comparing how things are with how we want things to be and if they do not match, doing something to get closer to how we want things to be. This difference between what we want and what we are currently experiencing is known as *error* or *discrepancy*, and so control is a process of reducing error (Powers, 1973, 2005). Within PCT, this process of control through reducing error is managed using a *negative feedback loop* (Ashby, 1952; Miller, Galanter, & Pribram, 1960; Powers et al.,, 1960; Wiener, 1948). The way that a negative feedback loop works is beyond the scope of this article, but it is described in detail elsewhere (e.g. Carver & Scheier, 1982; Mansell, 2005; Mansell & Carey, 2009; Powers, 1973). Importantly, it provides the mathematical relationships that allow control to work *in practice*, for example within robotic devices or computerised demonstrations (Powers, 2008).

Throughout this review, we will be illustrating how themes of personal control are involved in research and theories of psychological change. In particular, we will focus on how 'control' has been viewed as both an adaptive and a maladaptive process, with no precise criteria or explanation for when control is a problem as opposed to when it is the solution to psychological distress. Through describing the further principles of PCT, it will become clear how PCT operationalises control as a process and defines the conditions under which it is helpful and under which the process of control can become problematic.

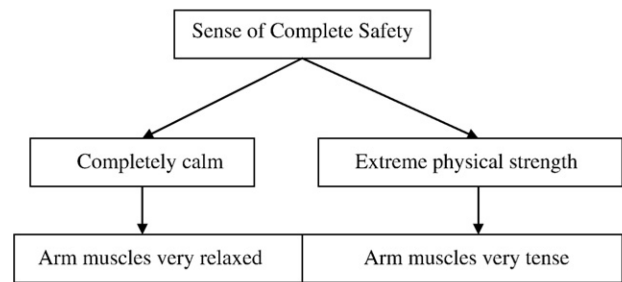

Fig. 1. An illustration of hierarchical control and conflict. Each box contains a goal or internal standard.

1.2. Hierarchical organisation

One key question in understanding how control works is to ask where the goals (also called internal standards or reference values), come from. PCT proposes that the goals are set inside the individual. More accurately, when we act to try to achieve one goal, we do this by setting a range of subgoals for ourselves. For example, an individual may wish to be safe. To do this, he selects the subgoals of feeling calm and feeling physically strong. This hierarchy can now be illustrated with a simple diagram, as shown in Fig. 1.

Note that the goal of feeling safe does not trigger any kind of behaviour; it sets the perceptual goals for the next level below; the way that these goals are achieved is through setting further subgoals. In this example, it may involve the intensity of tension in the individual's arm muscles. It is only at this lowest level at which the intensity of an experience can actually be sensed, that a person engages in a behaviour, which in this case would be to send nerve signals to the muscles, to keep their tension in the desired range. Within PCT, the layers of control are described in detail, but again are beyond the scope of the current article (Powers, 1973, 1998). It is important to note however that higher level control only ever sets subgoals for the next layer down and never triggers a 'behaviour', and that these hierarchies clearly have the capacity to branch in a complex manner. In this way, a subgoal can achieve different ends (e.g. going for a walk serves the higher level goals of socialising and being healthy) and a higher level goal can be achieved through different subgoals (e.g. becoming successful through writing papers and going to conferences).

This review will focus on how other theories have either an explicit or implicit hierarchical organisation, suggesting that this kind of organisation is highly relevant for understanding psychological change. It is critical to PCT because it helps us to understand how people can chronically fail to achieve their goals due to *conflict*.

1.3. Conflict

In the earlier example, feeling calm and feeling strong were both subgoals for the goal of staying safe. However, in this example, feeling calm was achieved through a *low* degree of muscle tension, whereas feeling strong was achieved through a *high* degree of muscle tension. Therefore, the highest level goal (to feel safe) sets two subgoals (to feel calm and to feel strong) that in turn set conflicting and incompatible subgoals for the individual's immediate experience (the level of muscle tension). The individual might switch between tensing and relaxing his muscles without ever feeling the sense of safety he desires. If he were to tense his muscles for any period of time to feel stronger, he may begin to not feel calm, and so relaxes them, but then starts to not feel strong and so tenses them again. Often, one subgoal dominates for a long time – e.g. to tense to feel strong – but it fails to achieve the higher level goal, and the patient maintains a sense of lack of safety, within this example.

According to PCT, this kind of goal conflict is a key cause of psychopathology including disorders such as anxiety and depression, and even delusions and hallucinations (Mansell, 2005; Powers, 1973). From a PCT perspective, the content of the goals and subgoals is irrelevant; it is the presence of conflicting goals that maintains the problem. Conflict is particularly problematic whenever one goal involves controlling an experience that conflicts with a second, important goal, but the person does not consider the second goal at the time. This is called *arbitrary control* (Mansell, 2005; Powers, 1973). According to PCT, this process can occur both *within* and *between* individuals. Examples of arbitrary control between people might include telling off a child for wetting himself without trying to understand why it happened, changing the subject in a conversation even though the other person wants to tell you something important, and at its extremes, violations of human rights such as neglect, abuse and torture. Examples within individuals include a person who tries to stop themselves feeling sad, even though feeling sad may help them to grieve, or someone who tries to suppress a traumatic memory, even though having that memory would be part of working out what happened in the trauma to cope with it better in the future. When people avoid a situation that is important to them, such as a job interview, this is clearly another example of arbitrary control. According to Powers (1973), arbitrary control is only ever a short-term solution because it leads to conflict as the second goal remains active despite the short-term attempts at controlling it. It is only by addressing the higher level 'goals-behind-the-goals' that long-lasting change can occur. So, according to PCT, no one knows enough about the internal world of another person, or even *themselves*, to be able to suggest what they *should* be experiencing (Carey, 1999), and so even providing someone with some persuasive advice can be unhelpful.

Within this review, we will identify themes of conflict within existing theories, and how psychological change seems to involve the shift from a state of chronic conflict between goals, to a state of reduced conflict associated with improvements in quality of life and potential recovery. PCT provides one further principle that explains this mechanism of change; the principle of reorganisation, which is explained below.

1.4. Reorganisation

According to PCT, *reorganisation* resolves conflict between goals (Powers, 1973). It is a trial-and-error learning process that randomly alters the way that we perceive our environment and set our goals until we manage to achieve them in the long term. In the earlier example, there are a number of ways that reorganisation could reduce the goal conflict. The individual may find another way to feel strong that does not involve getting tense muscles, or he may adjust his priorities so that feeling calm is more important than feeling strong. Each of these changes will involve how the patient sets his subgoals, so that overall, his goals are more achievable. The exact process of reorganisation is beyond the scope of this article, yet this process of trial-and-error adaptation can be modelled mathematically to show how it reduces goal conflict and improves functioning over time (Marken & Powers, 1989; Powers, 2008).

Key to the process of reorganisation is awareness. According to PCT awareness is mobile and can shift up and down to different parts of the hierarchy (Powers, 1992). For example, you can be aware of reading the words on this page, and then become aware of the pressure of the seat underneath you, or then become aware of how you are breathing, and then become aware of feeling hungry or thirsty, etc.

To be effective in the long term, reorganisation needs to affect the higher level goals because they are responsible for setting all of the lower level subgoals. If change only occurs at the lower layers, it will not endure, as these layers receive their goals from the level above. In other words, we need to change our long-term personal goals rather than simply modifying our different routines and habits for change to endure. Therefore, for reorganisation to be effective in the long term, awareness must be directed and sustained at these higher level goals (Carey, 1999). Any therapy that notices and facilitates change of higher level goals has a greater likelihood of lasting, according to the theory. In the clinical example, the individual needs to consider how he tries to keep safe and consider alternative ways of knowing or achieving safety, rather than trying to achieve exactly the right muscle tension that makes him feel safe. Thus, according to PCT, effective therapy occurs when therapists let go of their own attempts to control the individuals' experiences, yet can create the conditions for individuals to sustain their awareness on their higher level goals long enough for them to start to experiment with changing them or considering them differently. This is the goal of Method of Levels, a therapy based on PCT described elsewhere (Carey, 2006).

This review will highlight the way in which other theories regard a shift in higher (or 'deeper') psychological processes as important in psychological change and the way in which they conceptualise this process occurring.

Table 1
Four key principles of PCT and examples of similar concepts within familiar psychotherapies.

Psychotherapy	Principle of PCT: Control	Hierarchical structure	Conflict	Reorganisation of higher level systems	Examples of associated techniques
Psychodynamic approaches	Ego control of the id and superego	Id Ego Superego	Unconscious conflicts	Insight	Free association Interpretation
Cognitive theory and CBT	The collaborative approach (balanced interpersonal control); thought control as problematic	Strategies Dysfunctional attitudes Core beliefs	Conflicting action tendencies Contradictory beliefs about worry (Wells & Matthews (1994))	Schematic change Cognitive reappraisal	Sharing formulations Reality testing Behavioural experiments
Interacting Cognitive Subsystems and MBCT	Attentional control as a learned skill	Sensory level (acoustic, visual, body-state) Perceptual level (morphonoloexical, object) Response level (vocal, motor) High level central engine (propositional, implicational)	–	Modification of affect-related schema	Mindfulness training
Relational Frame Theory and ACT	Control regarded as problematic	Behavioural plans Rules values	Acting in ways inconsistent with own values and goals	Behaviour change in alignment with own values	Mental polarity exercise The observer exercise
Motivational interviewing	Honour the autonomy of the client	–	Ambivalence to change	Consistency between behaviour and core values	Reflective Listening Reframing

2. Explanations of change in a selection of psychological theories

With the considerable proliferation in the number of psychotherapies designed to initiate change in those who seek psychotherapeutic assistance, there are now countless approaches to psychotherapy. Nevertheless, over the last fifty years, some key approaches have emerged. This review selects the most prevalent therapies within health services: psychodynamic therapy, cognitive behavioural therapy including its most recent 'third' wave developments, motivational interviewing and client-centred counselling. A wide array of other therapies, such as emotion-focused therapy (Greenberg, 2002) and systemic/family therapies (cf. Sexton, Weeks, & Robin, 2003) may equally lend themselves to being understood through a PCT approach, but have been omitted in order to maintain a focus. Psychodynamic therapy and cognitive behavioural therapy have become leading theoretical approaches in the individual treatment of adults (Norcross, Hedges, & Castle, 2002). More recently, there has been a rise of acceptance and mindfulness-based interventions, termed the "third wave" cognitive behavioural interventions. Also, motivational interviewing has become a widely adopted counselling style for facilitating behaviour change, particularly in the domain of addiction (Markland, Ryan, Tobin, & Rollnick, 2005). In the following section, it will be considered how these key domains of psychotherapy fit with the core principles of PCT. In addition to the above, client-centred counselling is an important and widely used psychotherapeutic approach (Ward et al., 2000). The principles of client-centred counselling, and how they fit with a PCT approach will be considered in a later section of the review. Table 1 shows the key domains of psychotherapy and their consistence with a PCT approach.

2.1. Control

The concept of control is implicit within each of the aforementioned approaches but rarely regarded as a core feature of the theories. Psychoanalytic/psychodynamic approaches view psychological distress as being related to unresolved unconscious conflicts and have their origins in Freud's writings and a series of contributions from later analysts with somewhat diverse approaches (Jacobs, 1998). Within early psychoanalytical approaches, it is theorised that the manifestation of anxiety is a sign that the ego (self-concept) is struggling to control the impulses and demands of the id (instinctive drives) and superego (internalised cultural values and rules). The development of defence mechanisms such as repression and denial is an attempt by the ego to cope with this anxiety and regain control. It is not exactly clear whether control is regarded as adaptive in that repression is seen as a counterproductive mechanism, and yet the control over the id by the superego is regarded as an inevitable process of culturalisation by society.

Within cognitive behavioural therapies (CBT), control is also important, however there is ambiguity as to whether it is adaptive or not. Clients in CBT suggest the goals for therapy, engage in a collaborative negotiation over which of these goals to work on, and after the therapy is complete, will be able to be in control of their lives independently from the therapist. Thus, the importance of clients' own control at the start and end of therapy is clear, yet with an understanding that the therapeutic interaction entails balancing control between therapist and client. Despite these features being essential to CBT, there appear to be no attempts to explain the interpersonal control process within traditional cognitive theory (Waddington, 2002). In addition, control over internal experiences has been regarded both as a constructive (Greenberger & Padesky, 1995) and maladaptive (Purdon, 1999) process. This suggests that it is the *nature* of control rather than control *per se* which is important.

Mindfulness-based cognitive therapy (MBCT) proposes a critical role of *attentional control* (Teasdale, Segal, & Williams, 1995) so that central to this approach is the teaching of individuals' attentional control skills in which individuals disengage from dysfunctional modes of information processing to more functional modes (Teasdale, 1999a). MBCT combines aspects of cognitive therapy which facilitate a detached or decentred view of one's thoughts, with attentional control training which teaches the switching from dysfunctional processing modes to a mode of processing which has the capacity for effective modification of affect-related schematic models (Segal, Williams, & Teasdale, 2002). This mode of processing is seen to promote integrated cognitive–affective inner exploration, the use of present feelings as a guide to problem solution and a non-evaluative awareness of present subjective-self-experience. Thus, in MBCT we also see the benefits of both *letting go* of control of thoughts through decentering and *improving* control over attention.

In apparent contrast, the approach of Acceptance and Commitment Therapy appears to consider control as a problematic process. Indeed, this has been stated explicitly: "Control is the Problem" (Hayes, 2004, p. 19). Relational Frame Theory (RFT) (Hayes, Barnes-Holmes, & Roche, 2001) is used to support the development of ACT. According to the theory, at the core of human language and cognition is the ability to learn to relate events mutually and in combination, to change the functions of specific events based on their relations to others that are not related formally but on the basis of arbitrary cues, and these bring them under contextual control. For example, having learned that "x" is "smaller than" "X" humans are able to apply this relation to events under the control of arbitrary cues such as the words "smaller than" (Hayes, 2004).

For Relational Frame Theory, a primary source of psychopathology is a weak or unhelpful contextual control over language processes which leads to psychological inflexibility; an inability to persist or change behaviour in the service of long-term valued ends (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). The term cognitive fusion is given to the process by which human behaviour is excessively regulated by inflexible verbal processes such as rules and derived relational networks, which in turn results in individuals' acting in ways that are inconsistent with what the environment offers in relation to their own values and goals.

For Acceptance and Commitment Therapy (ACT) (Hayes, Strosahl, & Wilson, 1999) the general goal of therapy is to increase psychological flexibility, that is the ability to contact the present moment more fully as a conscious human being, and to change or persist in behaviour when doing so. Yet, this again begs the question — what is the mechanism through which people can learn to be more 'psychologically flexible'? Is this not simply a more sophisticated and adaptive way to be in control of one's life?

We suggest that PCT proposes a simpler solution to the dilemma over the role of control in psychopathology that spells out the mechanisms involved. First, according to PCT, to live is to control the experiences which are important to us, and so there can be nothing problematic *per se* about control as a process. Control only becomes a problem when it creates chronic conflict. This normally occurs when control is *arbitrary* – we try to change an experience, such as suppressing traumatic memories, while ignoring the fact that we have other goals that enhance the exact same experience – such as 'trying to understand what happened to me'. According to the theory, these incompatible goals are set by a higher level goal, e.g. 'to maintain my identity' which maintains both of them. Therefore, in this example, a change needs to be made in how this person tries to maintain his or her identity through the way he or she sets and regulates when and how to remember or suppress traumatic memories. When we see control as being a problem, we see individuals who tend to repeat the same concrete goals or routines over again due to the conflict with their own life goals, whilst being poorly aware of their own overarching motives. When we see control working *without* a significant problem, we see individuals who move forward by modifying their goals flexibly in the light of their overarching values — they are in control of their life yet 'striving for control' is not an issue

for them at the moment. They do control, but it is the kind of flexible control that utilises and balances lower order goals to serve its ends, rather than rigidly adhering to one routine. When considering the process of control in this way it becomes important to explore the role of hierarchical organisation in other psychotherapeutic approaches.

2.2. The importance of higher levels within a hierarchical structure

The idea that the human mind is structured hierarchically into discrete levels of cognition is evident in a range of psychological theories (e.g. Conway & Pleydell-Pearce, 2000; Minsky, 1987). Furthermore, it is implied in a number of the approaches mentioned earlier. What is important also is that these approaches also share the proposal that it is at the higher levels that enduring change will be more robust and facilitate a fuller recovery.

As mentioned earlier, Freud's psychodynamic theory details the topographical and structural models of the human psyche as being made up of three distinct parts; the id, ego and superego (Freud, 1923). In this approach the id represents the drives that are shared with other animals and the ego holds the self-concept that is in turn regulated by the superego, which internalises societal norms and values. While the hierarchical relationship between the three parts of the psyche is not spelled out, there is an assumption that progress will be made through uncovering the deeper, as yet unconscious, aspects of the psyche, principally components of the id that are suppressed during development for societal needs.

The cognitive behavioural model is much more explicit in its layered structure. It can be considered to comprise of three hierarchical levels of cognition: core beliefs at the deepest level (e.g. ‘I am unloveable’), followed by dysfunctional attitudes (e.g. ‘I need to be extremely successful to feel loved’) through the thoughts and behavioural strategies that are manifested in a particular situation (e.g. ‘try to conceal my mistakes’).

Within mindfulness-based CBT, the Interacting Cognitive Subsystems' (ICS) framework goes into much greater depth than earlier approaches, detailing nine cognitive subsystems (Teasdale & Barnard, 1993). At the superficial level are three subsystems dealing with different sensory codes, at a ‘deeper’ level are subsystems processing intermediate codes; two perceptual level and two response level codes, and at an even ‘deeper’ level are two subsystems processing high level codes related to meaning (*implicational* and *propositional* systems). According to the ICS framework, all cognition involves the continual flow and exchange of information between these different levels of mental representation, yet psychotherapeutic change typically requires the effective interchange of information between the two *higher level* subsystems.

The hierarchical nature of RFT that guides ACT is more implicit, in its distinction between rules that govern behaviour relatively inflexible, and higher order ‘values’ that are seen to promote more adaptive functioning (Hayes et al., 2006). However, the exact mechanism of linkage between these levels seems not to be specified.

As explained earlier, the hierarchical nature of the human mind is a fundamental feature in PCT. In a similar vein to ICS, it provides a framework for different levels of cognitive control. It differs in that it recognises the requirement for multiple levels of representation even within relatively low levels, such as those involved in controlling bodily posture and intensity of stimulation. Furthermore it proposes that each level of the hierarchy is formed from purposeful negative feedback loops rather than simply the one-way stream of information. Thus, within PCT, the hierarchy of control encompasses basic feelings of intensity of stimulation through the higher *implicational meanings* described within the ICS. What is regarded as *propositional meaning* within ICS would be considered as a function of the *imagination mode* within PCT, which is a functional disconnection between different levels in a control system hierarchy that facilitates simulation of the lower level perception (‘as if’ simulation), and allows the generation of organised representations (i.e. language) that can be rehearsed internally or articulated to others. The explanation of this mode is beyond the remit of this article and explained in more detail by Powers (1973, 2005).

2.3. Becoming aware of conflict

While the concept of ‘conflict’ is one of the defining features of the psychodynamic approach (Freud, 1930; Horney, 1945; Klein, 1959), it is also implicit or explicit in other accounts. Although the role of conflict is not explicitly described in cognitive behavioural approaches, some cognitive behavioural theorists have implicitly inferred conflict in their models. The balance between approaching and avoiding a feared object in exposure treatment for phobias is an illustration of conflicting action tendencies. More recently, in Wells' (2005) metacognitive model of Generalised Anxiety Disorder, individuals are said to hold both positive and negative beliefs about worry, and are described as being in conflict in the sense that they are in “two minds about worrying”. Acceptance and Commitment Therapy asserts that individuals experiencing psychological distress is acting in ways that are inconsistent with their own values and goals (S. C. Hayes et al., 2006). Put another way, ACT suggests that the individuals' current behaviour is in conflict with their values and goals. The idea of conflict is also a fundamental principle of Motivational Interviewing which assumes that the individual holds conflicting motivations associated with both engaging in new behaviour patterns and staying with old behaviours (Markland et al., 2005). Thus the role of conflict, whether implicitly or explicitly described is evident in the psychotherapeutic approaches considered here.

The phenomenon of awareness arises often in psychotherapy discourse, and is reiterated in the psychotherapeutic approaches that are the focus of the review, which propose that it is the bringing of conflict into awareness which is fundamental to the change process. The psychodynamic approach describes therapy as a process in which unconscious material is brought into conscious awareness (Blum, 1992).

Cognitive behavioural approaches encourage individuals to become aware of their negative *automatic* thoughts, and the relationship between thoughts, feelings and behaviours, and how they impact upon one another to create problems. The focus is therefore on discussing deeper problems openly within conscious awareness (Beck, 1976). Motivational Interviewing talks of helping clients generate or intensify their awareness of the discrepancies between their current behaviours and core values (Miller, 1996). The Interacting Cognitive Subsystems' framework utilised within MBCT aims to increase patients' ability to become aware of and engage from core dysfunctional modes of processing to a mode of processing in which individuals are focally aware of their thoughts, internal and external sensations (Teasdale, 1999b). Finally, Acceptance and Commitment Therapy teaches skills to enable non-judgemental contact with the present moment fully in order to enable greater awareness of the here and now experience (Hayes et al., 2006). Therefore, awareness seems to be afforded a central role in all of the psychotherapeutic approaches we have reviewed.

Within PCT, we are aware of the experiences that we cannot control, rather than the ones that we can, which are managed automatically. This fits closely with research illustrating that people can manage sophisticated control outside their awareness (Hassin, Uleman, & Bargh, 2005). When there is chronic conflict between goals, awareness must be directed to the higher level goals responsible for the conflict, so that the person can re-establish normal control. Thus, a PCT account illustrates how what we call ‘awareness’ will be associated with psychological change. This process of change in PCT, reorganisation, forms the last part of this section of the review.

2.4. Reorganisation of higher level systems

The psychological accounts described earlier propose that it is the changes in higher level ‘meanings’ and how these are experienced that

accompany change. The insight promoted by psychodynamic interventions would reflect a shift in higher order cognition. Within CBT, clients are encouraged to entertain alternative beliefs about themselves, their world, and their own mental processes with the aim that this will promote sustained changes in core underlying assumptions and beliefs (Beck, 1967). Within ICS, the process of change involves changes in higher order implicit meanings or schematic mental models that are facilitated during therapy, and in ACT, change involves moving forward in line with one's overarching values (Hayes et al., 2006).

Within PCT, when we reorganise our deeper personal goals, this allows enduring psychological change. This process is specified in detail as a random trial-and-error change in the properties of the systems that set goals, which continues until effective control is regained (Marken & Powers, 1989; Powers, 2008). It occurs at all levels, but it is at the high levels that it is required for long-term psychological change. What we notice as 'lightbulb moments' and sudden shifts in perspective that we could not have anticipated in advance are indicative of high level reorganisation. It is important to note that reorganisation does not change specific behaviours nor set different goals; it changes the properties of the systems that set goals and that utilise behaviours to allow the smooth control of perception (Powers, 1973). This explains how people, and other living organisms, adapt their behaviour in an ongoing way, e.g. to adapt the volume of their voice to their conversation partner, while more significant changes are made at a higher level of goal setting, such as *choosing* one's conversation partner in this example. People will be made up of the same systems after effective psychological therapy, but these components are reorganised — priorities change, goals may be held less rigidly and styles of relating to others may shift.

The next section of this review explores the change process itself and examines whether it is consistent with this process of reorganisation in PCT.

3. Explaining empirical findings concerning the processes of change

In summary, PCT proposes the following stages of psychological change:

1) the client is aware of losing control over key aspects of their life ('error' is increased).
2) the client becomes increasingly aware of the conflicted goal systems that are causing lack of control.
3) reorganisation of the higher level systems occurs on a trial-and-error basis.
4) over time, the systems eventually reorganise in a way that reduces conflict and the clients experience an improvement in the overall control of their life and regain a sense of purpose.

While stages 1 to 4 may occur on a long-term basis over the course of the therapy, it is clear that these stages can also occur on a smaller scale over the short term. In other words, present examples of how becoming aware of one's own conflict, allowing reorganisation, and experiencing the benefit in reduced error can occur prior to the individual addressing the root of their difficulties. Even working through the conflict of whether to experience a disturbing thought, or to suppress it may allow sufficient time for reorganisation that promotes more effective control over that experience. It is also important to note that many individuals may choose not to go further than this first stage if there are factors that prevent their awareness from reaching higher levels. It is critical to begin to understand how to engage and help these clients if they are unwilling even to be aware of the psychological causes of the problems they are experiencing. Yet, a PCT approach would predict that, in the long term, these clients would not typically benefit from psychological therapy and therefore either drop out early or attend for different reasons until they are willing to consider and discuss their own goals.

In particular, PCT would predict that in clients who maintain therapy over time, there are incremental improvements that start early on and continue, with occasional greater improvements as higher order goals are reorganised with positive consequences. However, as reorganisation is a trial-and-error process, occasional worsening of problems would also be expected at times until an adaptive reorganisation is hit upon by the system (Carey, 2006). Furthermore, PCT would predict that different clients would experience change over varying amounts of time, depending on the time it takes to experience sufficient reorganisation to reduce their goal conflict significantly.

A recent approach to investigating the process of change in psychotherapy has acknowledged the discontinuous and non-linear nature of change (Hayes, Laurenceau, Feldman, Strauss, & Cardaciotto, 2007). It involves multiple assessments over the course of the therapy and examination of the individual trajectories of the variable of interest. This is in contrast to traditional pre–post designs which assume that change is gradual and linear and thus provides only snapshots of the change process. This kind of study is particularly important because in clinical practice, clients attend for a widely varying number of sessions. Indeed, in a study of 9703 patients in primary care, treatment duration varied between 0 and 20 sessions and the amount of pre–post change was very similar across these widely varying treatment durations (Stiles, Barkham, Connell, & Mellor-Clark, 2008).

Hayes et al. (2007) identified three types of non-linear change in cognitive behavioural therapies for depression. Firstly, Ilardi and Craighead (1994) have identified an *early rapid response pattern* that is characterised by a substantial decrease in depressive symptomology in which 60–70% of the total symptom improvement occurred within the first 4 weeks of therapy.

Secondly, Tang and DeRubeis (1999; replicated by Tang, DeRubies, Beberman, & Pham, 2005) demonstrated, through plots of session by session depression severity in a sample of CBT patients, that many individuals experienced a sudden improvement in depression severity in one between-session interval. It was found that the occurrence of these improvements, named *sudden gains*, predicted better end-of-treatment outcomes.

Furthermore, Hayes, Beevers, Feldman, Laurenceau, and Perlman (2005) identified a third pattern of non-linear change named the *depression spike*. In investigating an exposure-based cognitive therapy for depression, analysis of individual trajectories revealed a rapid response pattern, akin to the early rapid response pattern identified by Ilardi and Craighead (1994). Moreover, the analysis revealed a pattern of large increases in depressive symptomology during the exposure phase of the therapy, which was subsequently followed by a decrease in symptoms.

The three forms of non-linear changes identified above tend to fit with our predicted workings of a goal hierarchy and how it changes during reorganisation. Random changes are made to the structure of the systems responsible for error and this process ceases when the error has been reduced. Therefore the length of time it takes for individuals to regain control over their lives may be variable and relatively unpredictable, which is consistent with the literature. It is possible that the beginnings of therapy may encourage certain individuals to talk, consider and think about their problem in a way that they have not done before, in turn directing awareness to and promoting reorganisation at the conflicted part of the hierarchy, which may manifest itself as an *early rapid response pattern*.

Furthermore, the reorganisation of higher order systems in which the properties of the systems that set goals have been altered would likely manifest as *sudden changes* in goal setting. In turn this would reflect sudden gains in functioning, which, within the literature have been variously termed as *sudden gains*, *insight*, *cognitive reappraisal*, *schematic change*, *shifting perspective* and *resolving ambivalence*. For example, Tang and DeRubeis (1999) found that patients reported more cognitive changes in the session immediately preceding the

sudden gain in comparison to a control session, i.e. the session immediately preceding the session before the sudden gain. Thus, it was suggested that these sudden improvements were triggered by the cognitive changes i.e. correction of patients' negative beliefs, found to take place prior to the sudden gain. Within PCT, this process would be explained as the reorganisation of the systems regulating higher level goals (e.g. around concepts of the self and the world).

PCT would also predict that during the process of reorganisation of conflict, there can be a further loss of control of abilities for a period of time as systems are adjusted i.e. higher order systems will have reorganised to set new subgoals for the levels below, many of which themselves need to reorganise in order to achieve the goals the higher order systems require (Carey, 2006). This in turn may well manifest itself in some individuals as the *depression spike*. A concrete example of this is where a longstanding perfectionist realises that the costs of her perfectionism outweigh the benefits and so she sets every day goals that are less demanding. In turn, this entails goals for new experiences at lower levels – other people's surprise at her change; feelings of uncertainty when work is completed to a lower standard – which she then needs to adjust to. This is clearly just one example, and a more complete test of the early response, sudden gain and the depression spike within a PCT framework would require modelling of these systems in action.

Qualitative approaches to the investigation of psychotherapeutic change show further consistencies with PCT. These studies recognise that client accounts can provide valuable contributions to understanding psychotherapeutic change. Unlike quantitative approaches that require individuals to parcel their responses into preformed categories provided by a researcher, qualitative research allows the individuals to fully share their own story of change (McLeod, 2006). Qualitative approaches can be valuable in helping understand the individuals' experience of therapy; what they liked and disliked about a therapy, and what they found helpful or unhelpful in therapy. However, it has been suggested that qualitative methodologies can also be used in examining *how* change occurs and thus could be valuable in advancing theoretical understandings of mechanisms of change in therapy (Elliott, 2008).

Qualitative investigations into the mechanism by which change occurs have been carried out by Carey, Carey, Stalker et al. (2006) who qualitatively explored the question of *what* change is and *how* it occurs during the psychotherapy process. It was found that participants emphasised a change in feelings, thoughts and actions which appeared to define what change was for them. The authors also found that both internal factors such as motivation and readiness, and external factors such as the relief of talking were emphasised in participant accounts of what helped change occur. It was found that participants were unable to give an account of exactly *how* this change had happened, nevertheless they provided descriptions of change as involving both sudden and gradual components.

Furthermore, Higginson and Mansell (2008) in an investigation into transdiagnostic recovery processes similarly found that in individuals with somewhat disparate experiences, they paradoxically described the process of recovery as involving both gradual components where change 'crept up' on them and also pivotal moments in which things 'just fell into place'. Both Carey, Carey, Stalker et al. (2006) and also Higginson and Mansell (2008) likened this to the phenomenon of *insight* often described in psychotherapy literature; the gradual component compared with the experience of impasse and the "aha!" experience of suddenly understanding how to solve a problem. Further themes included the 'shift in perspectives' they gained during recovery, and the impression that they could see their 'old self' through the eyes of their 'new self', after recovery. Again, these findings are consistent with the proposal that psychological change involves the direction of awareness to the level that is 'above' where the problems are manifested, and recovery involves regulating existing goals in different ways through reorganisation.

4. Evidence for factors involved in psychotherapeutic change

It is important to consider what is known about the kind of therapeutic environment that facilitates psychotherapeutic change, and whether this fits with the principles of PCT. The following section will highlight the prerequisites for psychotherapeutic change drawn partly from client-centred therapy (Rogers, 1957), and in turn consider them within a PCT account.

4.1. Client variables and control

From a PCT perspective, people function through their *own* internal control of experience. As explained earlier, attempts by an individual to try to adopt other people's goals without reference to one‘s own internal goals (arbitrary control), will lead to conflict. Therefore, PCT would predict that an individual who chooses to participate in therapy in accordance with and owing to his own motivations would be an individual predicted to benefit most. Conversely, an individual who engages in therapy due to the needs, desires or demands of other people would not be expected to benefit. That is of course unless that individual's own motivations were to change through the course of the therapy. This prediction is highly consistent with the literature, as will be demonstrated below.

It is widely recognised in the psychotherapy literature that an individual does not passively receive treatment but must actively participate in it (Krause, 1966). Thus hugely influential in the process and outcome of therapy is the openness and willingness of the client to participate and facilitate the efforts of the therapist. The contribution from the client is often referred to in the literature as that of client motivation. Although there has been confusion concerning the definition of this concept, Zuroff et al. (2007) have coined the term *autonomous motivation* which they define as the extent to which patients experience participation in treatment as a freely made choice emanating from themselves. Others have similarly referred to this as engagement, adherence, compliance, treatment involvement, treatment engagement or active participation (Drieschner, Lammers, & van der Staak, 2004). There is empirical evidence to support the role of client motivation in successful therapy outcome (Keijsers, Hoogduin, & Schaap, 1994; Luborsky, Crits-Christoph, Mintz, & Auerbach, 1986; Orlinsky & Howard, 1986; Schneider & Klauer, 2001). What's more, Zuroff et al. (2007) have found *autonomous motivation* to be a stronger predictor of outcome than therapeutic alliance, predicting both remission rates and post treatment symptom severity across both interpersonal therapy and cognitive behavioural therapy for depression.

Furthermore, it is suggested that the key to successful client engagement in therapy is the adoption of the clients' own frame of reference regarding their present problem i.e. its causes, and its potential remedies. Providing clients with a voice and putting clients in 'the driver's seat' is essential in maintaining the clients own frame of reference (Miller, Duncan, & Hubble, 2004). There is evidence to show that seeking client feedback concerning clients' experience of the therapeutic alliance and of progress in treatment results in significant improvements in both client retention and outcome (Miller, Duncan, Brown, Sorrell, & Chalk, 2007).

Further supporting the role of client motivation in psychotherapeutic change is the research demonstrating the effectiveness of introductory motivational enhancing interventions in improving clients' response to subsequent psychotherapy in a number of domains including anxiety (Slagle & Gray, 2007; Westra & Dozois, 2006), anorexia (Gowers & Smyth, 2004) and obsessive compulsive disorder (Simpson, Zuckoff, Page, Franklin, & Foa, 2008).

Taken overall, individuals who take an autonomous choice to engage in therapy, who are driven to do so by their own motivations and whose own frame of reference is adopted during therapy, are those individuals who would be more likely to persist with therapy

and gain from it. Put another way, it is those client variables which are associated with processes of control. This is clearly consistent with the fundamental principle of PCT that to function effectively is to control one's own experiences. Furthermore, the importance of client control in psychotherapy in turn implies the importance of therapist variables which facilitate the client's control.

4.2. Therapist variables and control

From a PCT perspective, therapist characteristics related to change would be those that are associated with low interpersonal control, i.e. limited *arbitrary control* (Mansell, 2005; Powers, 1973). By avoiding direct attempts from the therapist to advise, influence or manipulate the client, this circumvents the possibility that the therapist will engage in the arbitrary control of a client's behaviour, in turn preventing the exacerbation and creation of further conflict. Low arbitrary control would exemplify a therapist who is genuine about his or her own goals but does not impose them on the client, and who accepts the client's own frame of reference. This perspective is again consistent with the literature as will be demonstrated below.

Carl Rogers was one of the first in the field to pioneer a research into psychotherapy and accordingly set out the necessary and sufficient conditions of therapeutic change (Rogers, 1957). Of the six conditions he described, three became central. The first condition set out by Rogers was that of a therapist who is congruent or integrated in the relationship with the individual seeking a therapy. Also termed *genuineness*, this is the idea that for a successful change, the therapist is freely him/herself and must honestly self-disclose his/her experience of therapeutic relationship. The second of the necessary and sufficient conditions was that of *unconditional positive regard* towards the client. By this, Rogers explained that the therapist should not approve or disapprove of any aspects of the client's experience, even if, in another framework, this could be seen as destructive. Rather, the therapist should experience a warm acceptance of each aspect of the client's experience. The last central condition set forth by Rogers for successful psychotherapeutic change was that of accurate and *empathic understanding* on behalf of the therapist of the client's private world, as the client sees it. Therefore for Rogers, psychotherapeutic change will occur providing the therapist is genuine and unconditionally accepting, while empathically understanding of the client.

Empirical research has supported the role of these variables on outcome in therapies other than the person-centred therapies. For example, in a review by Keijseres, Schaap and Hoogduin (2000) it was concluded that there was sufficient empirical evidence to suggest that the Rogerian therapist characteristics had a consistent impact of treatment outcome in the cognitive behavioural therapies.

The therapist characteristics associated with positive therapy outcomes and known to be prerequisites for change are those associated with an accepting, open and non-judgmental therapist. Put another way, it appears to be those characteristics associated with low interpersonal control. Again, this is highly consistent with the principle of arbitrary control within PCT. Nevertheless, according to PCT this is not sufficient, and it is the conditions which facilitate the client's shift of awareness to the conflicted higher level systems maintaining their distress that must also be present for significant psychological change to occur.

4.3. The therapeutic alliance and managing conflict

A PCT account would propose that a therapist who can manage to facilitate their clients' autonomous control of their own experience whilst managing any conflict that arises would in turn engender a strong therapeutic relationship between therapist and client. PCT would therefore predict a strong therapeutic relationship to have an important role in psychotherapeutic change. The importance of the therapeutic alliance is well established within the psychotherapy literature as explained below.

The idea of the importance of the client–therapist relationship has its origins in the psychodynamic approach, nevertheless all psychotherapy orientations acknowledge the importance of the therapeutic relationship in psychotherapeutic change. The therapeutic alliance has come to be defined as the extent to which the patient and therapist agree on the goals of treatment, the extent to which patient and therapist agree on the tasks to achieve these goals, and the quality of the bond that develops between them (Bordin, 1979).

The empirical literature supporting the role of the therapeutic alliance on outcome in psychotherapy is now vast. According to Horvath and Bedi (2002), there are over 2000 studies demonstrating the positive relationship between therapeutic alliance and successful therapy outcome. A meta-analysis carried out by Martin, Garske and Davis (2000) found a consistent and positive relationship between the therapeutic alliance and outcome (correlation of .22). While much research has been carried out with reference to psychodynamic and interpersonal therapies (DeRubeis, Brotman, & Gibbons, 2005), research on the role of the therapeutic relationship in cognitive behavioural therapies for a number of different client groups has also demonstrated the value of the therapeutic alliance in therapy outcomes (Kazdin, Marciano, & Whitley, 2005; Klein et al., 2003; Raue, Goldfried, & Barkham, 1997; Vogel, Hansen, Stiles, & Gotestam, 2006).

Overall, it appears that the therapeutic alliance i.e. the extent of the agreement regarding the goals and tasks of therapy and the bond between therapist and client is an important requisite for psychological change. Put another way it is the client's satisfaction concerning the balance of control between the therapist and client which is an important prerequisite for change. Within PCT, shared goals of this kind allow both the client and the therapist to control their own experiences and keep the arbitrary control of one another to a minimum (Mansell, 2005).

4.4. Shifting awareness in therapy

While the earlier therapeutic factors are prerequisites for change, a PCT perspective would propose that for long-lasting psychological change, the reorganisation needs to occur in the systems responsible for generating the problem. While much of this process can occur in many people naturally, a PCT approach would propose that, in individuals with an enduring problem, reorganisation of these systems must be blocked in some way, otherwise there would be no problem. For most individuals there needs to be an active component of the therapy beyond the client and therapist characteristics that directs and sustains awareness, and therefore reorganisation, to the higher level goals where it will make a difference in reducing chronic error.

Within many therapies, awareness shifting techniques (e.g. sharing formulations, reflective comments, and reality testing) are interspersed within the therapy, making their active ingredients difficult to isolate. Nevertheless, there is a range of convergent evidence that techniques which involve shifting awareness lead to a greater psychological change than conditions where they are absent.

Classically, exposure to feared objects, whether in real life, or more importantly for the current proposal in *imagination*, is an effective treatment (Nathan & Gorman, 2002). Within cognitively-oriented exposure methods, it has been shown that training clients with social phobia to shift awareness towards the social environment, over which they have mixed motivations to approach and avoid, leads to significant improvement relative to a control condition (Wells & Papageorgiou, 1998). These techniques each involve redirecting attention to the perception of what is feared and sustaining attention until the feelings of anxiety are better endured. Within PCT terms, the process of directing attention towards the problem and sustaining it

there is exactly what is required to allow reorganisation to take place. When reorganisation is modelled in computer simulations, the error across systems (which is experienced as arousal — see earlier[1]) may temporarily increase, but gradually will drop over time (Powers, 2008).

It is notable that mindfulness-based CBT is seen to operate through a similar process to exposure — helping the client to control their attention and sustain it on an experience (often the process of breathing). There is now an emerging evidence for the efficacy of mindfulness-based interventions (Baer, 2003) and that this works through improving attentional control as assessed by laboratory tasks (Lutz, Slagter, Dunne, & Davidson, 2008). In a review of a wide range of different psychological therapies, Martin (1997) proposes that *decentering* and *focusing* of attention are the two forms of mindfulness that are the keys to effective change in psychotherapy. The fact that mindfulness combines these skills with non-judgemental acceptance may underline the importance of this interpersonal stance in therapy, both from the therapist towards the clients and the clients towards their own experiences. Furthermore, in a form placing less emphasis on the relationship, *attentional training* is a technique designed to enhance 'mindful awareness' and trains clients to shift, divide, focus and sustain their attention towards different auditory stimuli, yet involves little further contribution from the therapist. This also has an emerging evidence base (Wells, 2007).

As a final prominent example, expressive writing involves writing about one's problem or traumatic experience, including one's 'deepest feelings' about it and it does not involve a therapeutic relationship. It is unclear how much the technique relies on the writing process versus focusing awareness on the problem. Across a range of samples it has proved effective in reducing long-term distress in relation to a control condition of writing about time management (Pennebaker, 1993).

There appears to be little systematic research that attempts to quantify the relative role of awareness shifting in relation to the client, therapist and relationship variables described earlier. However, there is a range of convergent evidence to suggest that there are benefits from improving the clients' capacity to control their attention, and to focus it on the source of their difficulties, which are often the focus of conflict (e.g. 'deep' emotional states; whether or not to worry; how close to approach a feared object). This area of enquiry would clearly benefit from further investigation, but at present it seems consistent with a PCT perspective that would require reorganisation to be directed and sustained at the focus of conflict at the higher levels in a hierarchy of goals.

5. Strengths and limitations of a PCT approach

PCT is a psychological theory that is based on functional mechanisms known to operate within technology that utilises control engineering. Therefore, it provides a truly mechanistic account of *how* change occurs, rather being descriptive in nature. In utilising control engineering terms, rather like the use of latin terms in the biological sciences, it allows the precise operationalised definition of its components in contrast to psychological terms, such as 'attitudes', 'insight' and 'beliefs' that are typically imported from every day usage. In this way, it situates itself between different disciplines of psychology, rather than borrowing terms from one approach (e.g. CBT) in preference to the others. PCT has a strong philosophical grounding that situates it as a person-centred, or organism-centred, theory, which is highly consistent with the most prominent psychological therapies, perhaps with the exception of early behavioural approaches (Mansell & Carey, 2009).

In addition to the above strengths, which are conceptual in nature, this review has highlighted how PCT, developed prior to many of the psychotherapies described, is highly consistent with how each of them explain psychological change. Several components that are alluded to in other theories, such as the process of control, the hierarchical nature of goals, and the role of awareness to higher (or deeper) levels, are made concrete in PCT through its specification of how adaptive control works in practice. The theory itself is supported by a wealth of empirical evidence (for a review, see Mansell & Carey, 2009), yet its explanation for the maintenance and resolution of psychological distress needs further empirical study. The advantage of PCT is that it can be used to develop computer models whose match with observable phenomena can be examined at both a quantitative (e.g. Marken, 2001) and qualitative (e.g. Tucker, Schweingruber, & McPhail, 1999) levels.

Method of Levels is a therapy developed directly from PCT that utilises the factors we have reviewed, and is developing an emerging evidence base (Carey, Carey, Mullan, Spratt, & Spratt, 2009). It can be applied to a wide range of mental health problems as PCT is not specific to any one disorder but regarded as a universal theory of human function and dysfunction. It is therefore 'transdiagnostic' in its application, which carries with it many advantages in terms of parsimony and ease of training and delivery (Harvey, Watkins, Mansell, & Shafran, 2004).

A final strength to emphasise is the capacity of PCT to guide clinicians' and researchers' expectations regarding the timing of psychological change and how best to measure it. It suggests that the number of sessions required for effective change is better determined by the individual rather than based on assumptions about the appropriate number of sessions based on group studies (Carey & Spratt, 2009). The most appropriate measures of outcome are likely to be the ones that assess the sense of purpose, self-coherence and flexible goal-directed action achieved during recovery. Some candidate scales include the Measure of Mundane Meaning (Brown, Roach, Irving, & Joseph, 2008) and the Authenticity Scale (Wood, Linley, Maltby, Baliousis, & Joseph, 2008).

There are several limitations of a PCT approach as it stands, which often relate to the purposes of the individual who is attempting to understand and utilise the theory. First, the computational methods to evaluate the theory may only be accessible to a small number of researchers. Second, there is a reasonable argument that the level of detail provided by PCT is not necessary for understanding psychological therapy for the purposes of a clinician. For instance, any computer model could not precisely model human functioning, which in Powers' (1998) version of PCT utilises eleven levels of control. Whether psychotherapists could or should learn such a sophisticated theory, when many clearly manage to effect change in their clients at the moment, is debatable. There is clearly a challenge for the theory to be palatable and feel useful to therapists whilst at the same time being explained and tested in a way that satisfies researchers. The most fruitful approach may be to learn about the theory in small steps, taking the most useful components as they are needed, yet remaining open to learn more. There may be many therapists who do not strive for psychotherapy integration as they perceive that one discipline of therapy appears patently superior across all client groups — clearly, while this is at odds with the evidence, such therapists would not be interested in an integrative account, however persuasive. A final issue relates to the goals for future research. While PCT appears to provide an integrative account for why the client, therapist, relationship and technique-related factors are involved in psychological change, it does not immediately explain their relative contribution nor how each can be most effectively utilised in individual cases. Future research could explore how these factors combine within a PCT model to provide

[1] Within PCT, it is strictly the error within certain *intrinsic* control systems governing variables essential for survival (e.g. warmth) that drives reorganisation and is associated with increases in arousal as the body prepares for action but is blocked by a further conflicting control system (Powers, 1973). However, overall error across systems provides an approximation of intrinsic error. Computer models exploring reorganisation and its dynamic impact on control over time are available in Powers (2008).

more useful answers about their importance in clinical practice. For example, the roles of the client and therapist, and their interaction could be modelled using computer-based simulations of control systems.

6. Summary and conclusions

Perceptual Control Theory has been introduced as an explanatory framework for psychological change. The key principles of the theory – control, hierarchical organisation, conflict and reorganisation – were explained alongside several contemporary psychotherapies and their theoretical foundations. Each psychotherapeutic approach, despite superficial differences, provided an account that was consistent with the psychological principles of PCT. In particular, the importance of the reorganisation of conflicting higher order control processes emerged across the accounts; this process is at the heart of psychological change according to PCT. Furthermore, factors that have been found to promote psychological change — intrinsic motivation in clients, non-judgemental acceptance in therapists, shared goals in a working alliance, and strategies to shift and focus awareness are integrated within a PCT framework. Further research will be required to test the validity of this integrative approach and to explore the relative importance of each of these factors, for example within computerised models of psychological dysfunction.

This review has made a detailed case that PCT provides the kind of transdiagnostic, transtheoretical theory that many clinicians and services strive for in order to integrate their wide reading and clinical experience across modalities and patient groups. It has the capacity to allow them to focus their conceptualisations of psychological distress and recovery to guide their intervention and evaluate their practice. Future work in this area will be needed to reveal the true potential of a control theory approach to psychological change.

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