

Understanding the Change Process Involved in Solving Psychological Problems: A Model-based Approach to Understanding How Psychotherapy Works

Richard S. Marken^{1*} and Timothy A. Carey^{2,3,4}

¹Department of Psychology, Antioch University, Los Angeles, California, USA

²Centre for Remote Health, Alice Springs, NT, Australia

³Central Australian Mental Health Service, Alice Springs, NT, Australia

⁴Centre of Research Excellence in Rural and Remote Primary Health Care, Alice Springs, NT, Australia

A review of the literature on psychotherapy suggests that improvements in effectiveness, efficiency and accessibility have been hampered by a lack of understanding of how psychotherapy works. Central to gaining such understanding is an accurate description of the change process that occurs when someone solves a psychological problem. We describe the Perceptual Control Theory (PCT) model of human functioning, which can be used to understand the nature of psychological problems and how they are solved. PCT suggests that problems can be broadly grouped into two categories: those that can be solved using existing skills and those that require the generation of new skills. In general, psychological problems belong in the second category. PCT describes a fundamental form of learning in which existing structures and systems are reorganized to create new skills, perspective and insights. Psychotherapy based on PCT is aimed at directing reorganization to the source of the problem. Copyright © 2014 John Wiley & Sons, Ltd.

Key Practitioner Message:

- Understanding the phenomenon of control is central to understanding how psychotherapy works.
- Conflict could be considered a general formulation for psychological distress.
- Therapy will be efficient when the reorganization process is focused at the right level of the client's control hierarchy.
- Therapy will be effective only when the client's reorganization system—not the therapist—has managed to come up with a solution to the client's problem.
- What the client says about the nature and reason for their problem is less important than the point of view from which these problems are being discussed.

Keywords: Psychotherapy Effectiveness, Efficiency, Change Processes, Reorganization, Control

The benefits of psychotherapy are widely acknowledged. Decades of empirical work have provided a large amount of direct evidence of the benefits experienced by people who access psychological treatments. Indirect evidence comes from other sources as well such as increased funding for the provision of psychological treatments. In recent times, national governments have allocated large amounts of funding to improve access to psychological treatments. The Australian Federal Government allocated \$507 million in 2006 specifically to the Better Access to Mental Health Care initiative (Australian Psychological Society, 2007, p. 5), and since 2007, the British Government

has channelled over £700 million into the Improving Access to Psychological Therapies (IAPT) programme (Department of Health, 2012, p. 10).

Improving the Effectiveness, Efficiency and Accessibility of Psychotherapy

While the results of psychotherapy are gratifying, there is no doubt that improvements could be made in terms of the effectiveness, efficiency and accessibility of psychotherapy. With regard to effectiveness, Asay and Lambert (1999) report that the average treated person is better off than 80% of untreated people which, when viewed from the other side of the bell curve, also means that 20% of untreated people are better off than 50% of treated people (Carey, 2006a, 2011a). Moreover, although there continues to be a proliferation of

*Correspondence to: Richard S. Marken, Department of Psychology, Antioch University, Los Angeles, 400 Corporate Pointe, Culver City, CA 90023, USA.
E-mail: rsmarken@gmail.com

new psychotherapies, there has not been a commensurate increase in therapy effectiveness. A meta-analysis including 48 randomized controlled trials (RCTs) of the treatment of depression from 1981 to 2009 showed no trend of increasing effect size over time (Cuijpers, Li, Hofmann, & Andersson, 2010). Another meta-analysis of 26 RCTs from 1977 to 2009 noted a linear decline in effect size until 1995 when effect sizes appeared to stabilize (Collins & Carey, in press).

In terms of accessibility, Norcross (2000) estimates that 70% of people who would otherwise meet the criteria for a diagnosable mental or behavioural disorder will never receive specialized mental health care. Expensive government initiatives like Better Access and IAPT have been designed specifically to improve the accessibility of psychological treatments. The development of significant waiting lists, however, continues to be a challenge (Department of Health, 2012). Accessibility may be closely related to efficiency in terms of the provision of psychological treatments. If the design or delivery (or both) of treatments is inefficient, then accessibility to these services will be compromised.

Evident in the literature is a significant disconnect between the amount of treatment considered ideal by those who develop and deliver treatments on the one hand and those who access them on the other hand (Carey, 2006b, 2011b). While treatments are typically designed to be more than 10 sessions, the average number of appointments clients attend in routine clinical practice is fewer than 10 (Carey, Tai, & Stiles, 2013). The startling schism between how much treatment policy makers and treatment providers think clients should have and how much treatment clients think clients should have is illustrated by data from the United Kingdom. The National Institute for Health and Clinical Excellence (NICE) recommends that when people receive CBT for depression, 'the duration of treatment should typically be in the range of 16 to 20 sessions over three to four months' (NICE, 2009, p. 28). In the first year evaluation of IAPT, however, Glover, Webb, and Evison (2010) reported that the 'numbers of treatment sessions were surprisingly low' (p. 23). The median number of appointments was fewer than 10 with only 1.38% of the sample of 7825 clients attending 16 or more treatment sessions.

Clients who do not attend as many treatment sessions as clinicians expect them to attend are typically labelled treatment 'drop outs' (Carey, 2011b), yet it has been demonstrated that clients who stop attending after a small number of sessions can make the same amount of change as clients who attend 20 sessions (Stiles, Barkham, Mellor-Clark, & Connell, 2008). In this study, the rates of change of 9703 patients attending routine treatment in primary care services in the United Kingdom were examined, and in results that replicated an earlier study, it was found that 'Clients' mean pretreatment-posttreatment change was approximately constant regardless of treatment duration (in the range of 0 to 20 sessions)' (p. 298).

When clients do not attend the full programme of psychological treatment as it was designed but still experience benefits, then, clearly, all of the advice, information and activities provided within the programme are not essential for the resolution of psychological problems (Carey, 2011b). Treatment efficiency is rarely considered explicitly in empirical investigations, yet inefficient treatments are likely to compound problems of accessibility. It is inefficient to create therapies that require more sessions to deliver than the number of sessions clients are prepared to attend. Understanding more clearly how people use psychotherapy to solve psychological problems would enable the design of more effective and more efficient treatments.

Understanding How Psychotherapy Works

In some ways, it is remarkable that psychotherapies are as effective as often as they are. Kazdin (2009) reports that on the whole, we do not understand how or why our therapies work, and he considers the question of how psychotherapy works to be one of the most urgent questions for the field. Similarly, Silberschatz (2012) has been intrigued by the question of how psychotherapy works for more than 30 years. Furthermore, a review of the change process in psychotherapy concluded that despite change being the central pursuit of psychotherapists, there is no widely accepted definition of change, no clear principles of change and no unambiguous articulation of important mechanisms of change (Carey *et al.*, 2006).

One of the barriers to a clearer articulation of how psychotherapy works in general is a lack of understanding of the change that occurs when people move from a state of psychological distress to less distress or even contentment or satisfaction. Appreciating the change involved in moving from a state of distress to less distress is important to all forms of psychotherapy. Currently, for example, there are different therapeutic options available to people experiencing a problem such as depression. If different people access different forms of psychotherapy such as Cognitive Behaviour Therapy (CBT), Acceptance and Commitment Therapy (ACT), Emotion-Focused Therapy (EFT) and Interpersonal Psychodynamic Therapy (IPT), and they all experience benefits, it is highly unlikely that they each managed to match their own particular depression with the ideal therapy (Carey, 2008b). It is much more likely that there is a generic change process occurring that each of these different therapies facilitate. It is a generic process such as this that we are describing in this paper.

The change that occurs in psychotherapy is sometimes routine, such as realizing that other people are not being judgmental and critical, and sometimes dramatic, such as understanding that a different relationship with internal voices can be established. If the change process were understood more clearly, then the way in which psychotherapy facilitated this process might be more apparent. In fact,

considering the client as an active agent in psychotherapy (Bohart, 2000; Bohart & Tallman, 1996) suggests that the question of how psychotherapy works may be misguided. Rather than asking how psychotherapy works, a more nuanced question may be to ask how clients use the resources of psychotherapy to achieve the benefits they desire.

Understanding the client as an active agent is important when investigating the change process since the change process is, fundamentally, a subjective phenomenon (Krause *et al.*, 2007). Change occurs, internally, to the neuronal structures and systems of the individuals seeking to reduce the distress generated by the psychological problems they are experiencing. In the quest to discover how psychotherapy works, it is important to keep in mind that only a proportion of people who solve psychological problems do so through the assistance of psychological treatment. Many people find other ways of reducing the distress of psychological problems. The most effective and efficient treatments, therefore, may be the ones that capitalize on, or promote, the change process that operates when people resolve psychological problems without psychotherapy.

A series of studies about the change process emphasized the similarity of the change process regardless of whether the change occurred with or without therapy (Buchan, Galbraith, & Carey, 2013; Carey *et al.*, 2007; Higginson & Mansell, 2008; Gianakis & Carey, 2011). These studies interviewed people who had experienced and then resolved psychological distress. The studies found that the change process described by people attending therapy was similar to the change process described by people who had resolved their problems without therapy.

One of the most interesting aspects of these studies was that participants could not identify *how* change occurred. They could identify what changed, for example attitudes (Carey *et al.*, 2007), perspectives (Higginson & Mansell, 2008) and thinking processes (Gianakis & Carey, 2011). They could also identify techniques or tools that they believed had facilitated the change process such as problem-solving strategies (Buchan *et al.*, 2013), cost-benefit analyses (Gianakis & Carey, 2011; Higginson & Mansell, 2008) and various other strategies such as homework, medication, thought diaries and relaxation techniques (Carey *et al.*, 2007).

Despite their confidence *that* change had occurred, participants were at a loss to explain *how* their distressed state transformed into contentment or satisfaction. In some ways, it was astonishing to discover that such an important and palpable experience would also be indescribable, yet this apparent inability to articulate the process of change is supported by everyday experience. Many people are familiar with the phenomenon of trying hard but unsuccessfully to recall the name of an enjoyable movie or a famous actor only to have the name 'pop' into awareness at a later time. Despite the undeniable certainty of the occurrence of this experience, it is very difficult to describe how this 'pop' occurs.

Enhancing the Breadth and Depth of Our Research

While the achievements in psychotherapy research have been impressive, advancing significantly from our current position will require enhancing the breadth and scope of our research. It is difficult to envisage major progress in the effectiveness, efficiency and accessibility of psychological treatments without some alterations to the way in which research programmes are currently conceptualized and conducted. Directing more of our research efforts towards the investigation of fundamental principles and using different methodologies to build convergences of evidence are two important areas.

There have been calls to shift the focus from empirically supported practices to empirically supported principles (Rosen & Davison, 2003). These calls have been answered, at least in part, with empirical findings documented in authoritative texts (e.g., Castonguay & Beutler, 2006). While Castonguay and Beutler (2006) have provided a large number of principles that apply to specific contexts and circumstances, it will also be important to delineate a small number of foundational principles that apply generally. Principles relevant to the change that occurs with psychotherapy as well as to the change that occurs without it would be ideal.

Rigorous and robust approaches to the distillation of common principles may require the augmentation of existing research methodologies. The benefits of combining quantitative and qualitative methods are being increasingly recognized (Altimir *et al.*, 2010). These methods could be complemented further by the methodology more common in the physical sciences of building models that are capable of generating data by simulating the phenomenon under investigation (Carey, 2008a). The functional models of the physical sciences are different from the conceptual or statistical models that are more common in the life sciences (Carey, 2011a); however, the sturdiest knowledge of all will be generated when the findings from qualitative and quantitative research converge with and confirm the results of basic research using model-building methodology.

It is clear that understanding the change process is central to the task of improving psychotherapy. Modelling methodologies hold out the promise of a robust, accurate and precise understanding of this process. But in order to implement these methodologies, it is necessary to understand what is being changed in the change process. In particular, these methodologies require a specification of the end or problem-free state of the change process. Perhaps our current lack of certainty regarding the change process required for reducing psychological problems stems from an ambiguous position concerning the problem-free state of individuals.

Unless we are to assume that individuals have been psychologically distressed since birth, it is reasonable to suggest that psychologically distressed individuals once

functioned satisfactorily. The general aim of psychotherapy could be considered to be to help people resolve their psychological problems in order to remove the distress they are experiencing and restore satisfactory day-to-day functioning. Understanding satisfactory daily functioning, therefore, would be a necessary first step in being able to articulate more clearly the change required to return to this state from a place of distress.

The Satisfactorily Functioning Individual: One Who Is 'in Control'

Uncompromised daily functioning can be understood as a control process. 'Life is control—an uninterrupted process of specifying, creating, and maintaining—a process in which all that is not essential is free to change, preventing change in what is essential' (Bourbon, 1995, p. 151). 'Any entity that lives must be able to act on the environment it inhabits (which often changes in unpredictable ways) to control important aspects of its internal state' (Carey, 2011a, p. 243). At a physiological level, it is important for the continuation of life to control variables such as body temperature and blood glucose levels. At more complex levels, it is just as important to life to be able to control the position and speed of a car in traffic or the distance between oneself and the cliff edge during hiking excursions. At even more abstract levels, it is important to be able to control the clarity of one's communication or the level of honesty and intimacy in relationships.

Given the importance of control to daily living, it is not surprising that control is referred to pervasively, either directly or indirectly, throughout the psychotherapy and psychopathology literature. Psychological problems are often discussed in terms of difficulties with behavioural control, thought control, emotional regulation and impulse control. Dobson and Dozois (2001), for example, discuss a general model of psychopathology with control as a central construct. Orsillo, Roemer, Block Lerner, and Tull (2004, p. 82) maintain that 'acceptance-based therapies underscore the role of efforts to control internal experiences as key in the development and maintenance of psychological problems'. Difficulties controlling or regulating emotions are considered to be a core feature of Borderline Personality Disorder (Putnam & Silk, 2005). Orsillo and Batten (2002) maintain that anorexia is a disorder characterized by attempts at control. A 'need to control' is important in obsessive-compulsive disorder (Gwilliam, Wells, & Cartwright-Hatton, 2004), generalized anxiety disorder (GAD; Wells, 2005), panic disorder (Gelder, 1997) and alcohol use (Spada & Wells, 2006). Furthermore, beliefs about 'loss of control' are characteristic of depression (Pagel, Becker, & Coppel, 1985) and psychotic disorders (Morrison, Nothard, Bowe, & Wells, 2003). Theories such as control-mastery theory (Silberschatz, 2012) and Rehm's

(1977) self-control model of depression also highlight the centrality of control to understanding and treating psychological problems.

So a good deal of successful psychotherapy can be viewed as a process of people changing from feeling that they are 'out of control' back to feeling that they are 'in control'. Other forms of effective psychotherapy might help people reduce the amount of control they are trying to achieve in given situations. It is the case that both not having enough control and trying to control too much can generate psychological distress. Therefore, in order to increase the effectiveness and efficiency of this process, it is necessary to understand what control is and how it works.

Understanding Control

Control can be regarded as a fact of nature: 'a real, objective phenomenon that involves the production of consistent results under varying environmental conditions' (Marken, 1988, p. 196). Perceptual Control Theory (PCT; Powers, 1973, 2005) explains how control works. According to PCT, control is a process of acting to bring a perceived aspect of the world into a match with a mental specification for the state of that perception. For example, catching a fly ball seems to involve moving so as to keep a perception of the optical projection of the ball fairly stationary (Marken, 2001). Solving a mathematical equation for x involves using the rules of algebra to change the perception of the equation until x is alone on the left side. Clearly, these examples of control represent highly skilled behaviours. PCT explains how an entity should be organized to produce this kind of skilled behaviour. A general picture of this organization is shown in Figure 1.

The dotted line in Figure 1 separates the components of the system that are inside the controlling *agent* (above the dotted line) from those that are in the agent's *environment* (below the line). The aspect of the environment that is being brought to a goal state is the *controlled variable*. For example, this variable might be the state of a mathematical equation. The goal state of this variable is specified inside the controlling agent by the *reference signal*. For example, this signal might specify that the goal state for the equation is to be in the state ' $x = \dots$ '. In order to produce this goal

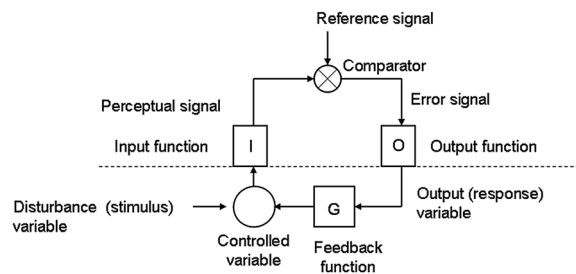


Figure 1. PCT model of control

state, the controlling agent must perceive, via the *input function*, the current state of the controlled variable (the equation). This perception exists in the form of a neural *perceptual signal* in the controlling agent.

The controlling agent continuously compares, via the *comparator*, the perceptual signal to the reference signal. To the extent that there is a discrepancy between perceptual and reference signal, the agent must produce outputs, via the *output function*, that affect the controlled variable in a way that brings the perception of this variable into a match with the reference signal. So in the example of solving an equation, to the extent that the perception of the state of the equation differs from the goal state, ' $x = \dots$ ', the agent must produce outputs—changes in the state of the equation consistent with the rules of algebra—that bring the equation to the goal state. And this must be done in the face of *disturbances*, such as distractions and “helpful” advice, which have effects on the controlled variable—the perception of the state of the equation—that are independent of the effects of the agent's own outputs.

When properly constructed, the agent in Figure 1 acts skillfully to bring the perception of a controlled variable to the goal state specified by the reference signal despite these disturbances; the behaviour of the agent can be described as the control of perception (Powers, 1973, 2005).

A ‘properly constructed’ agent—one that controls skillfully—is one that can (i) perceive the state of the variable to be controlled (the controlled variable) and (ii) produce the appropriate outputs when there is a discrepancy between the perception of the controlled variable and the desired (reference) state of that perception. In terms of the components shown in Figure 1, a properly constructed control system is one that has the appropriate perceptual input, *I*, and behavioural output, *O*, functions. Therefore, in order to be able to successfully control some aspect of the environment—to be able to solve mathematical equations, for example—an agent must develop the appropriate input and output function components of the relevant control system or, more realistically, for the relevant control *systems*, since virtually all skilled activities involve many control systems working together.

Learning to Control

According to PCT, the many control systems involved in producing any behaviour are organized in a hierarchy. Higher-level control systems control their perceptions by varying their outputs, which determine the reference inputs to lower-level systems (Runkel, 2003, p. 193–197). For present purposes, the relevant point is that learning to perform skilled activities requires developing the appropriate input and output functions for many control systems simultaneously. This development or learning process can only be performed by a process that is ‘outside’ the control systems that are involved in doing the

skillful behaviour. This is because the learning process must be able to assess how well the control systems involved in producing the behaviour are doing and be able to adjust the characteristics of these control systems—the characteristics of the input and output functions of these systems—in order to develop their ability to perform the behaviour skillfully.

PCT proposes that a ‘meta’ control system, called the *reorganization system*, sits outside the hierarchy of control systems and adjusts the parameters of these systems—reorganizes them—as necessary in order to develop good control, which is seen as skilled performance of tasks (Powers, 1973; Robertson & Powers, 1990).

Figure 2 shows the theoretical relationship between the reorganizing system and the hierarchy of control, according to PCT. The ‘learned hierarchy of control’ in this diagram is the set of control systems that are responsible for producing skilled behaviours like math problems or managing the relationship with one's spouse. A person who is able to do these things has presumably adjusted the parameters of the control hierarchy—the input and output functions of the control systems involved in this behaviour—to the appropriate values. The parameter adjustment was ‘appropriate’ in the sense that it made it

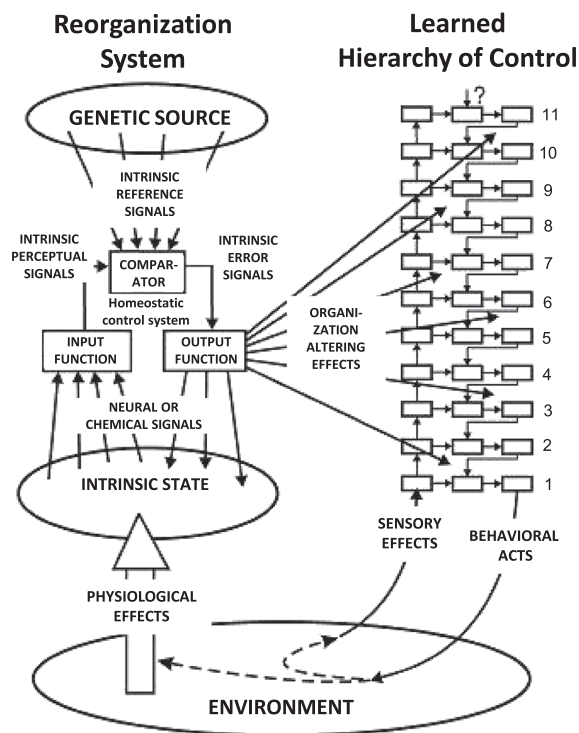


Figure 2. Relationship between the hierarchy of control systems responsible for producing behaviour and the reorganization (learning) system that ‘tunes up’ this hierarchy (after Powers, 2005)

possible for the person to control all the perceptions involved in solving math problems or managing the relationship with one's spouse. The diagram in Figure 2 shows that it is the reorganization system that is responsible for doing this adjusting.

The model of the reorganization system in Figure 2 assumes that control problems—the inability of the control hierarchy to produce the perceptions it wants—have perceptible physiological consequences, which involve driving *intrinsic* perceptions—perceptions of essential physiological variables—from their genetically specified intrinsic reference states. For example, the perception of the level of adrenalin in the blood might be driven from its specified reference state when a person cannot solve a math problem (produce the perception of a solved math problem) or manage their relationship with a spouse (produce the perception of a loving relationship).

When intrinsic perceptions do not match intrinsic references, there is intrinsic error that results in outputs from the reorganization system that alter the parameters of the input and output functions of control systems in the control hierarchy. To the extent that these changes in parameters result in improved control—improvements in the ability to solve math problems or manage the relationship with one's spouse—the physiological consequences of poor control decrease and intrinsic perceptions return to their reference states. Thus, the reorganizing system controls intrinsic perceptions of physiological state by manipulating parameters of the control hierarchy—the hierarchy of control systems that is responsible for what we see as behaviour.

Two Different Types of Problem

Essentially, we are proposing that problems can be grouped into two broad classes. For one group of problems, people are able to use their existing repertoire of skills to solve them. For the other group of problems, however, new skills and insights are required in order for the problems to be solved.

Control Problems

The control model in Figure 2 suggests that one kind of problem is that experienced by control systems that make up the learned control hierarchy. This is the problem of bringing a perception to a reference state, bringing the unsolved math equation to the state 'solved' or the unloving relationship to the state 'loving'. Such problems can be called *control problems*. If all the control systems involved in bringing a perception to its reference state are properly set-up, then a control problem is 'solved' by the normal operation of these control systems: the math equation gets solved; the relationship becomes loving. So a control problem can be thought of as being solved by the learned control hierarchy itself.

Control problems are not really problems at all, in the sense that the person with the problem knows how to solve them. These 'problems' are problems only in the sense that there is an initial difference between the present and goal states. But this difference is eliminated 'automatically' by the operation of the systems in the learned control hierarchy. So a person who has developed the control systems that allow the solution of a problem—that allow the person to be 'in control' of the problem situation—is not stumped about how to get from here to there, from present to goal state. The person simply does what is necessary to get to the goal. The 'problem solving' done by the learned control hierarchy in order to solve a control problem is what is seen as skilled behaviour.

Reorganization Problems

The control model in Figure 2 suggests that the other kind of problem is one that cannot be solved using the existing control systems that make up the learned hierarchy of control systems. This is the kind of problem where a person is truly unable to get from here to there, from present state to goal state, using their existing control skills; there are no systems in the person's existing learned hierarchy of control systems that can be used to solve such problems. For example, this is the kind of problem that confronts a person attending their first job interview. The control skills involved in knowing how to answer questions, how much information to provide and how to negotiate conditions; the skills required to successfully win a job interview have not yet developed.

Problems like attending one's first job interview—problems that cannot be solved using one's existing control skills—require changes to the learned control hierarchy; either new control systems have to be constructed and/or characteristics of existing ones have to be augmented. Making such changes is the job of the reorganization system. So these kinds of problems can be called *reorganization problems*. One of the main causes of reorganization problems is conflict between control systems within the learned hierarchy (Carey, 2006a). Conflict occurs when two or more higher-level control systems try to set incompatible references (goals) for lower-level systems. For example, one client with a long history of contact with mental health services regarding complex and comorbid problems expressed a 'thirst for life' and a 'desire for oblivion'. Another client heard voices telling her she was a 'whore' and that she should hurt herself; however, this client knew she was a good person and did not want to hurt herself. Simultaneously pursuing a thirst for life and a desire for oblivion as well as having commands to hurt oneself but also not wanting to hurt oneself are regarded as conflicts from a PCT perspective. Conflicts like these represent problems that cannot be solved using one's existing skill set; there is no skill that makes it possible to both hurt and not hurt oneself at the

same time. Thus, conflict problems are reorganization problems. Conflict is mentioned, either implicitly or explicitly, so pervasively in the psychopathology literature that it could be considered a general formulation for psychological distress (Carey, 2008c, 2011a).

Reorganization problems are intractable because the reorganization system does not know how to change the control systems in the learned hierarchy so that they are able to solve the problem. That is, a person's reorganization system does not know how to develop the skills required to solve the problem. If it did, then, again, there would be no problem because the reorganizing system would simply change the systems in the learned control hierarchy in exactly the way needed to solve the problem, and the problem would be solved (Petrie, 1981). But the reorganization system apparently does not know how to do this, as evidenced by the fact that people with certain kinds of problems often find it very difficult—sometimes impossible—to solve them.

Solving Reorganization Problems

People who are dealing with reorganization problems often seem to be flailing about searching for a solution in a random trial and error manner. This is consistent with the PCT model of how the reorganization system works. Since the reorganization system cannot possibly know how to change the systems in the learned control hierarchy so as to develop the skills needed to solve a problem, the best it can do is make random changes to the parameters of these systems and see if these changes make things better or worse. The random changes made to systems in the control hierarchy are the 'organization altering effects' shown in Figure 2. These are outputs of the reorganization system that make random changes to the input and output functions of the control systems in the learned hierarchy.

The consequences of these changes are either an improvement or deterioration in the ability of the learned hierarchy to solve the problem at hand. This improvement or deterioration is perceived by the reorganization system as a change in intrinsic states of the body, such as stress or anxiety levels. This is all that the reorganization system can perceive; it does not have the sophisticated perceptual abilities of the control hierarchy that is working to solve the problem. If the changes made by the reorganization system bring perceptions of one's intrinsic states—the intrinsic perceptions—closer to their goal (intrinsic reference) states—that is, they make things better—then further changes are delayed; if the changes push the intrinsic perceptions away from the intrinsic reference states—making things worse—then further changes are made immediately. Thus, the ultimate criterion is the effect of change on error. If, for example, avoidance behaviour results in error reduction, then that behaviour will persist. If, on the other hand, approach behaviour results in error

reduction, then that behaviour will persist. Thus, it is important to consider change from the perspective of the individual doing the changing in order to assess whether therapy is effective. Individuals will not all have the same goals or the same standards for the kind of change that means that the reorganization process has been effective.

The random trial and error approach to reorganization, called *E. coli* reorganization because of its similarity to the navigation process used by the bacterium, is quite efficient (Marken & Powers, 1989). This is true even when many control systems are involved in the development of a skill (Powers, 2008, pp. 1127–1146). However, there is some evidence that reorganization is applied to one level of the learned control hierarchy at a time (Robertson & Glines, 1985). This turns out to be an important fact to keep in mind when considering how reorganization problems can be addressed by psychotherapy (Carey, 2006a, 2008b).

Psychological Problems as Reorganization Problems

Most people who seek help for psychological problems are almost certainly dealing with reorganization rather than control problems. If the problem were a control problem, the person would be able to solve it using the skills that are already part of the existing learned hierarchy of control. The person might need a little help remembering which skills to apply in order to solve the problem, just as the math student might need a little help remembering which skills to apply in order to solve a particular equation. But the skills required to solve the problems are already part of the person's control hierarchy; no fundamental change in the hierarchy is needed.

People with reorganization problems do not currently have the skills—control systems in the learned control hierarchy—that will allow them to solve these problems. Such skills can only be developed through the operation of the reorganization system. So helping a person with a reorganization problem involves getting the person's reorganization system productively engaged in the process of developing the skills needed to solve the problem. It is also important to realize that individuals cannot 'make' themselves reorganize in the same way that they might make themselves get out of bed when the alarm rings for the second time.

The process of change in psychotherapy might be analogous, therefore, to the process of healing that occurs when someone breaks their leg or sustains a gash to their forearm. Broken bones can be set and plastered and gashes can be sutured; however, individuals do not 'make' their bones knit or their flesh fuse. Effective psychotherapy has the same function as a plaster cast or a set of sutures. It may be the necessary support for the reorganization process required to restore satisfactory daily functioning.

Getting Engaged

A productively engaged reorganization system is one that is operating on the parts of the learned control hierarchy that are most relevant to the problem. Although reorganization is a random trial and error process, the efficiency of this process can be improved by guiding this process to the locations in the control hierarchy where it can do the most good (Carey, 2006a, 2008b). The problem for the therapist is that it is not possible to communicate with the reorganization system directly; the reorganization system cannot talk or understand language. Indeed, as conceived in PCT, the reorganization system is rather dumb; all it can do is make changes to components of the learned control hierarchy and perceive the effects of these changes on the intrinsic states of the body.

Missing the Point

Talking and understanding talk are skills carried out by the learned hierarchy. So the therapist who is talking to a client about their problem is talking with the client's learned control hierarchy. That is, the therapist is talking with an aspect of the client that has the problem (the learned hierarchy of control) but not with the aspect of the person that can solve it (the reorganization system). The learned hierarchy of control is often able to describe the problem it is having and can also suggest possible solutions to the problem. So a client with a reorganization problem can sound like one with a control problem.

Mistaking a control for a reorganization problem is easy to do because the talk produced by the learned hierarchy can sound very competent. One of the skills of the control hierarchy is the ability to generate complex, rational descriptions of possible ways to go about solving a problem. This kind of talk can make it sound like the person has the skills needed to be able to solve the problem. And since the therapist is also capable of generating complex, rational descriptions of possible ways to solve the problem, it is likely that the therapist will consider it his or her job to contribute suggestions regarding the skills to be used to solve it. Thus, many therapists will treat people with reorganization problems as though they had control problems. Doing this misses the point in the sense that if the person has a reorganization problem, then the problem is with the control hierarchy and such problems cannot be fixed by the control hierarchy itself. The solutions to reorganization problems that are suggested by the learned control hierarchy cannot possibly solve them. Reorganization problems can only be solved by operating on the learned control hierarchy and that requires engaging the reorganization system.

Levels of Reorganization

Although it is not possible to talk directly with the reorganizing system, it is possible to determine at what

level of the learned control hierarchy the reorganization system is currently working. This is done by listening to the talk produced by the learned hierarchy—what the person is saying—and noticing when a person's 'point of view' with respect to the subject of this talk has changed (Carey, 2006a). The reorganization system seems to have a conscious component that moves to different places in the learned control hierarchy to 'see how things are going'. This conscious component of reorganization is apparently what guides the outputs of the reorganizing system to the different levels of the hierarchy. But this conscious 'searchlight' apparently moves autonomously; you cannot tell it where to go because it does not understand talk. The reorganization system was in place before we learned language—in fact, it was the mechanism that enabled us to learn language although the reorganizing system itself does not understand language. But the therapist can learn to detect changes in the location of this conscious searchlight by listening to the client's talk. And by keeping the talk oriented towards the new point of view, consciousness—and along with it reorganization—goes to the new level of the hierarchy.

How Psychotherapy Works

When a client's problem is truly a reorganization problem, then therapy works by bringing the *E. coli* (random trial and error) reorganization process to bear at the location (level) of the control hierarchy that needs to be changed. The therapist's role in this process is to try to notice when the client's conscious point of view about what they are saying has shifted to a background thought. This happens when the client starts talking *about* what they had previously been describing. For example, while talking about problems with a family member, the client might pause briefly and say something like 'I guess that was a kind of nasty thing to say'. Or a person who hears voices might say 'You know, I've never thought to ask them why they say the things they do'. Since these statements are a kind of evaluation of what had just been described, it is considered that the comments are made from a 'background' perspective about the 'foreground' conversation. When such background discussion is detected, the client is said to have gone 'up a level' (Carey, 2006a, 2008b). The therapist then tries to keep the client discussing things from this new point of view.

The process of keeping the client's attention at a new point of view is done iteratively, so that the client is eventually taking a new point of view on the topic that had previously been the background point of view. By constantly going to different points of view, the client brings the reorganization process to bear on the control systems in these parts of the hierarchy. To the extent that the source of the problem—usually due to a conflict—is at a particular level of the hierarchy, the reorganization process will

introduce new ways of perceiving (input) or acting (setting lower-level goals) for these systems, eventually producing a solution.

Since the process of reorganization is largely random, a solution to the problem is not guaranteed; certainly not guaranteed in a short period of time. Thus, part of the therapeutic process should be providing reassurance that a solution will eventually be found; the problem will be solved. But the solution will not necessarily come in the form of a revelation that can be articulated by the client. This is because the reorganization system works silently; it is literally dumb, in the sense of not being able to talk. So when a solution is found, the client will feel a sense of relief but will not necessarily be able to say why. The client may offer verbal explanations of the solution. But this, once again, is the learned hierarchy of control talking, and this hierarchy only knows about the results of reorganization via its effects on its own control skills. The talk coming from the client is the result of the reasoning skills of the hierarchy trying to make sense of its own behaviour. And this reasoning may not accurately describe the fixes to the hierarchy made by the reorganization system.

Effective and Efficient Psychotherapy

Understanding psychological problems from the perspective of the PCT model suggests two main principles that can be the basis of efficient and effective psychotherapy. The first principle is that therapy will be efficient when the reorganization process is focused at the right level of the client's control hierarchy. Therapy will be inefficient when the client 'wastes time' focusing on foreground thoughts about control problems that are a consequence of the operation of higher-level control organizations. Thus, one of the therapist's main goals is to help the client remain focused on the background thoughts that are the ultimate source of the problem (Carey, 2008b).

A second principle is that therapy will be effective only when the client's reorganization system—not the therapist—has managed to come up with a solution to the client's problem. The time taken to generate an appropriate solution is unpredictable. Some reorganizations may occur quickly, while others will take much longer. This helps explain a finding in psychotherapy research that some people change quickly while others take much longer, yet all seem to make about the same amount of change (Stiles *et al.*, 2008).

These principles of psychotherapeutic change flow naturally from an understanding of the PCT model of behaviour (control). With these principles in hand, the task of the psychotherapist is understood to be (i) helping the client bring their attention to 'higher level' background 'points of view' that are likely to be the source of the client's problem and (ii) helping to keep the client's

attention at the new higher-level point of view so that the reorganization can silently (and randomly) do its 'motorcycle maintenance' (Pirsig, 1974).

Directions for Research

The model-based approach to psychotherapy provided by PCT suggests several intriguing possibilities for research aimed at understanding the essential components of an effective and efficient psychotherapeutic process. Since it is assumed that changes in a client's 'point of view'—instances of 'going up a level'—are essential to the success of therapy based on PCT, an important question concerns the ability to recognize these changes. This could be tested by measuring interobserver agreement regarding instances of 'going up a level' during recorded therapy sessions. Once these shifts in perspective could be reliably identified, researchers could link aspects of these shifts with therapy outcomes. Are outcomes enhanced the more shifts a client makes in a session or are there particular shifts that are more crucial? Does this vary depending on the type of conflict the client describes?

Another important and related question for research concerns the ability of therapists to detect actual changes in a client's point of view when they occur. Again, this could be tested by having observers view recorded therapy sessions and indicate the times at which 'up a level' events occur. The observer's responses could be compared to a validated record of such events and measures of accuracy, such as d' , and bias, derived from the observed 'hit' and 'false alarm' rate (Green & Swets, 1966). Is it the therapist's responsiveness to 'up a level' events per se that is crucial or is there a particular way of responding that promotes more efficient reorganization?

The work of Wampold and his colleagues provides further directions for important research. It has been demonstrated that the relationships between therapist actions, the therapeutic alliance and therapeutic outcome are not straightforward (Ulvenes *et al.*, 2012). These authors suggest that some therapist characteristics and actions might predict alliance but not outcome. For example, they suggest that the therapist might engage in actions that the client finds agreeable but which also lead to an avoidance of work in psychotherapy that would lead to effective outcomes (Ulvenes *et al.*, 2012). Understanding the change process more clearly might allow us to discern the contributions of therapist and client personality variables as well as the way these variables interact to either facilitate or impede satisfactory change.

Given that even highly distressed people are not distressed in all parts of their lives where there are likely to be conflicts, an important question for research is 'what is it about any particular conflict that has produced a

sense of 'stuckness' experienced by clients who come in for psychotherapy"? Since any choice from a PCT perspective is essentially a conflict scenario—choosing between working late at the office or having dinner with the family is a conflict because there are two incompatible alternatives when only one can be chosen—why are some conflicts resolved effortlessly while others become chronic? Are there particular environmental attributes or characteristics of individuals that make chronic conflict more likely?

Finding satisfactory answers to questions such as these will require the convergence of quantitative, qualitative and modelling methodologies. It may also require a shift in perspective away from the practice of collecting data from samples and applying these averaged results to individuals and towards the habit of building our knowledge of the behaviour of people in general by developing robust models of individual functioning. Practices such as these may, at last, move us closer to resolving what Kazdin (2009) identified as the pressing problem of finding out how psychotherapy works.

Conclusion

The PCT model of human behaviour makes it possible to distinguish between problems that can be solved by our existing control skills—control problems—and problems that can be solved only through changes to our existing skill set—reorganization problems. Psychological problems tend to be reorganization problems, which cannot be solved using our existing skills, such as our reasoning skills. These problems require that the mute reorganization system reorganize the relevant control skills. The therapist's job is to get the reorganization system to continue the random trial and error reorganization process at the place in the learned hierarchy of control skills that is the source of the problem. This is done by looking for changes in the client's point of view in their talk about their problems.

An important conclusion from the PCT model is that it is not the substantive content of the client's talk that is of therapeutic importance; what the client says about the nature and reason for their problem is less important than the point of view from which these problems are being discussed. This point of view presumably reflects the place in the control hierarchy where reorganization is silently doing its work.

REFERENCES

Altimir, C., Krause, M., de la Parra, G., Dagnino, P., Tomicic, A., Valdes, N., ... Vilches, O. (2010). Clients', therapists', and observers' agreement on the amount, temporal location, and

- content of psychotherapeutic change and its relation to outcome. *Psychotherapy Research*, 20, 472–487.
- Asay, T. P., & Lambert, M. J. (1999). The empirical case for the common factors in therapy: Quantitative findings. In M. A. Hubble, B. L. Duncan, & S. D. Miller (Eds.), *The heart and soul of change: What works in therapy* (pp. 23–55). Washington, DC: American Psychological Association.
- Australian Psychological Society. (2007). *Better Access to Mental Health Initiative: Orientation manual for clinical psychologists, psychologists, social workers and occupational therapists*. Melbourne: Australian Psychological Society. Retrieved 14 January 2014 from <http://betteraccess.net/docs/Better-Access-Manual.pdf>
- Bohart, A. C. (2000). The client is the most important common factor: Clients' self-healing capacities and psychotherapy. *Journal of Psychotherapy Integration*, 10, 127–149.
- Bohart, A. C., & Tallman, K. (1996). The client as active self-healer. *Journal of Humanistic Psychology*, 36(3), 7–30.
- Bourbon, W. T. (1995). Perceptual control theory. In H. L. Roitblat, & J. A. Meyer (Eds.), *Comparative approaches to cognitive science* (pp. 151–172). Cambridge, MA: MIT Press.
- Buchan, C., Galbraith, V., & Carey, T. A. (2013). An interpretative phenomenological analysis investigation into men's experience of psychological change without psychotherapy. *Poster presented at the Counselling Psychology Annual Conference*, 11–12 July, Cardiff, UK.
- Carey, T. A. (2008a). Conflict, as the Achilles heel of perceptual control, offers a unifying approach to the formulation of psychological problems. *Counselling Psychology Review*, 23(4), 5–16.
- Carey, T. A. (2011a). As you like it: Adopting a patient-led approach to the issue of treatment length. *Journal of Public Mental Health*, 10(1), 6–16.
- Carey, T. A. (2006a). Estimating treatment duration in primary care. *Journal of Public Mental Health*, 5(3), 23–28.
- Carey, T. A. (2011b). Exposure and reorganization: The what and how of effective psychotherapy. *Clinical Psychology Review*, 31, 236–248.
- Carey, T. A. (2008b). Perceptual control theory and the method of levels: Further contributions to a transdiagnostic perspective. *International Journal of Cognitive Therapy*, 1, 237–255.
- Carey, T. A. (2008c). Hold that thought!: Two steps to effective counseling and psychotherapy using the method of levels. St. Louis, MO: newview.
- Carey, T. A. (2006b). *The method of levels: How to do psychotherapy without getting in the way*. Hayward, CA: Living Control Systems Publishing.
- Carey, T. A., Carey, M., Mullan, R. J., Murray, L., & Spratt, M. (2006). Psychological change: What changes and how does it occur? A critical review. *Counselling Psychology Review*, 21(4), 28–38.
- Carey, T. A., Carey, M., Stalker, K., Mullan, R. J., Murray, L., & Spratt, M. (2007). Psychological change from the inside looking out: A qualitative investigation. *Counselling and Psychotherapy Research*, 7(3), 178–185.
- Carey, T. A., Tai, S. J., & Stiles, W. B. (2013). Effective and efficient: Using patient-led appointment scheduling in routine mental health practice in remote Australia. *Professional Psychology: Research and Practice*, 44, 405–414.
- Castonguay, L. G., & Beutler, L. E. (Eds.) (2006). *Principles of therapeutic change that work*. Oxford: Oxford University Press.
- Collins, M., & Carey, T. A. (in press). Sources of heterogeneity in the meta-analysis of psychotherapy and antidepressant treatments of depression: Real or artefactual?
- Cuijpers, P., Li, J., Hofmann, S. G., & Andersson, G. (2010). Self-reported versus clinician-rated symptoms of depression as

- outcome measures in psychotherapy research on depression: A meta-analysis. *Clinical Psychology Review*, 30, 768–778.
- Department of Health. (2012). IAPT three-year report: The first million patients. London: Department of Health. Retrieved 14 January 2014, from <http://www.iapt.nhs.uk/silo/files/iapt-3-year-report.pdf>
- Dobson, K. S., & Dozois, D. J. (2001). Historical and philosophical bases of the cognitive behavioral therapies. In K. S. Dobson (Ed.), *Handbook of cognitive-behavioral therapies* (2nd ed., pp. 3–39). New York: Guilford Press.
- Gelder, M. (1997). The scientific foundations of cognitive behaviour therapy. In D. M. Clark, & C. G. Fairburn (Eds.), *Science and practice of cognitive behaviour therapy* (pp. 27–46). Oxford: Oxford University Press.
- Gianakis, M., & Carey, T. A. (2011). An interview study investigating experiences of psychological change without psychotherapy. *Psychology and Psychotherapy: Theory, Research and Practice*, 84, 442–457.
- Glover, G., Webb, M., & Evison, F. (2010). Improving access to psychological therapies: A review of the progress made by sites in the first roll-out year. Stockton-on-Tees: North East Public Health Observatory. Retrieved 14 January 2014 from <http://www.iapt.nhs.uk/silo/files/iapt-a-review-of-the-progress-made-by-sites-in-the-first-roll8208-out-year.pdf>
- Green, D. M., & Swets, J. A. (1966). *Signal detection theory and psychophysics*. New York: Wiley.
- Gwilliam, P., Wells, A., & Cartwright-Hatton, S. (2004). Does meta-cognition or responsibility predict obsessive-compulsive symptoms: A test of the metacognitive model. *Clinical Psychology and Psychotherapy*, 11, 137–144.
- Higginson, S., & Mansell, W. (2008). What is the mechanism of psychological change? A qualitative analysis of six individuals who experienced personal change and recovery following a significant life difficulty. *Psychology and Psychotherapy: Theory, Research and Practice*, 81, 309–328.
- Kazdin, A. E. (2009). Understanding how and why psychotherapy leads to change. *Psychotherapy Research*, 19, 418–428.
- Krause, M., de la Parra, G., Aristegui, R., Dagnino, P., Tomicic, A., Valdes, N., ... Ben-Dov, P. (2007). The evolution of therapeutic change studied through generic change indicators. *Psychotherapy Research*, 17, 673–689.
- Marken, R. S. (1988). The nature of behavior: Control as fact and theory. *Behavioral Science*, 33, 196–206.
- Marken, R. S. (2001). Controlled Variables: Psychology as the Center Fielder Views It. *American Journal of Psychology*, 114, 259–281.
- Marken, R. S., & Powers, W. T. (1989) Random-walk chemotaxis: Trial-and-error as a control process. *Behavioral Neuroscience*, 103, 1348–1355.
- Morrison, A. P., Nothard, S., Bowe, S. E., & Wells, A. (2003). Interpretations of voices in patients with hallucinations and non-patient controls: A comparison and predictors of distress in patients. *Behaviour Research and Therapy*, 42, 1315–1323.
- NICE. (2009). Depression: The treatment and management of depression in adults. London: National Institute for Health and Clinical Excellence.
- Norcross, J. C. (2000). Here comes the self-help revolution in mental health. *Psychotherapy*, 37, 370–377.
- Orsillo, S. M., & Batten, S. V. (2002). ACT as treatment of a disorder of excessive control: Anorexia. *Cognitive and Behavioral Practice*, 9, 253–259.
- Orsillo, S. M., Roemer, L., Block Lerner, J., & Tull, M. T. (2004). Acceptance, mindfulness, and cognitive-behavioral therapy: Comparisons, contrasts, and application to anxiety. In S. C. Hayes, V. M. Follette, & M. M. Linehan (Eds.), *Mindfulness and acceptance: Expanding the cognitive-behavioral tradition* (pp. 66–95). New York: Guilford Press.
- Pagel, M. D., Becker, J., & Coppel, D. B. (1985). Loss of control, self-blame, and depression: An investigation of spouse caregivers of Alzheimer's disease patients. *Journal of Abnormal Psychology*, 94, 169–192.
- Petrie, H. G. (1981). *The dilemma of enquiry and learning*. Chicago: University of Chicago Press.
- Pirsig, R. M. (1974) *Zen and the art of motorcycle maintenance: An inquiry into values*. New York: HarperCollins.
- Powers, W. T. (1973). *Behavior: The control of perception*. Chicago: Aldine.
- Powers, W. T. (2005). *Behavior: The control of perception* (2nd ed.). Bloomfield, NJ: Benchmark Publications.
- Powers, W. T. (2008). *Living control systems III: The fact of control*. Bloomfield, NJ: Benchmark Publications.
- Putnam, K. M., & Silk, K. R. (2005). Emotion dysregulation and the development of borderline personality disorder. *Development and Psychopathology*, 17, 899–925.
- Rehm, L. P. (1977). A self-control model of depression. *Behavior Therapy*, 8, 787–804.
- Robertson, R. J., & Powers, W. T. (1990). *Introduction to modern psychology: The control theory view*. Gravel Switch, KY: CSG.
- Robertson, R. J., & Glines, L. A. (1985). The phantom plateau returns. *Perceptual & Motor Skills*, 61, 55–64.
- Rosen, G. M., & Davison, G. C. (2003). Psychology should list empirically supported principles of change (ESPs) and not credential trademarked therapies or other treatment packages. *Behavior Modification*, 27, 300–312.
- Runkel, P. (2003). *People as living things: the psychology of perceptual control*. Hayward, CA: Living Control Systems.
- Silberschatz, G. (2012). Transformative processes in psychotherapy: How patients work in therapy to overcome their problems. *Psychotherapy in Australia*, 18(4), 30–35.
- Spada, M. M., & Wells, A. (2006). Metacognitions about alcohol use in problem drinkers. *Clinical Psychology and Psychotherapy*, 13, 138–143.
- Stiles, W. B., Barkham, M., Mellor-Clark, J., & Connell, J. (2008). Effectiveness of cognitive-behavioural, person-centred, and psychodynamic therapies in UK primary-care routine practice: Replication in a larger sample. *Psychological Medicine*, 38, 677–688.
- Ulvenes, P. G., Berggraf, L., Hoffart, A., Stiles, T. C., Svartberg, M., McCullough, L., & Wampold, B. E. (2012). Different processes for different therapies: Therapist actions, therapeutic bond, and outcome. *Psychotherapy*, 49, 291–302.
- Wells, A. (2005). The metacognitive model of GAD: Assessment of meta-worry and relationship with DSM-IV generalized anxiety disorder. *Cognitive Therapy and Research*, 29, 107–121.