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**UNRAVELLING THE “EQUIVALENCE PARADOX”:
AN EXPLORATION OF POSSIBLE MECHANISTIC EXPLANATIONS FOR THE
EQUIVALENCE OF THE PERSON-CENTRED APPROACH AND COGNITIVE
BEHAVIOURAL THERAPY**

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**Dissertation submitted to the University of Chester for the degree of Master of
Arts (Clinical Counselling) in part fulfilment of the modular programme in
Clinical Counselling**

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ABSTRACT

Aims: This project adopted a neuroscience perspective to explore the reason for the Equivalence Paradox, that is the finding that quite different therapeutic modalities are, as an approximation, equally effective. The project focussed on the equivalence of cognitive behavioural therapy (CBT) and person-centred therapy (PCT). This project is believed to be the first time that a *practitioner group* with a balance of allegiances has drawn conclusions from the intersection of neuroscience and psychotherapy.

Method: A literature search uncovered a set of findings or views (*neuroscience elements*) with possible relevance to the problem. In a focus group (or workshop) format, a group of PCT and CBT therapists contributed their understanding of healing processes based on their practice experience. They were then asked to match these experiences to the set of neuroscience elements provided.

Results: The group found that there are important similarities in terms of the therapeutic relationship and the desired endpoint, namely a more integrated, more congruent brain; however there were also significant differences in terms of processes that correlate to what is actually “done” in therapy. In CBT, affect-modulating left cortex and executive processes lead, whereas in PCT there is an emphasis on left-right and cortical-limbic “dialogue” and integration.

Conclusions: Overall, together with literature observations, the project concluded that for CBT and PCT different healing routes can be progressed, most likely with the client filling in between sessions the healing steps that are not specifically catalysed by the therapy. However “equivalence” may be just about symptom reduction; a CBT-healed brain may differ from a PCT-healed brain.

DECLARATION

This work is original and has not been submitted previously in support of any qualification or course.

Signed.....

Andrew J Garman

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LIST OF ABBREVIATIONS

CBT	cognitive behavioural therapy
EMDR	eye movement desensitisation and reprocessing
f-MRI	functional magnetic resonance imaging
HPA	hypothalamic-pituitary-adrenal
OCD	obsessive-compulsive disorder
NHS	National Health Service (UK)
PCC	pregenual cingulate cortex
PCT	person-centred therapy
PFC	pre-frontal cortex
PTSD	post-traumatic stress disorder
REM	rapid eye movement
SCC	subgenual cingulate cortex
SSRI	selective serotonin re-uptake inhibitor

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CHAPTER ONE

INTRODUCTION, AIMS AND OBJECTIVES

Introduction

One of the most enduring ideas in psychotherapy is the finding that most therapies are approximately equally effective: this is the *equivalence paradox* of psychotherapy, also known as the *Dodo Bird verdict*¹. The suggestion was first made by Rosenszweig in 1936 (Duncan, 2002) but the idea really took hold in the last few decades as a result of a number of meta-analyses of psychotherapy clinical trials (recently reviewed by Budd and Hughes, 2009).

Understanding the equivalence paradox has been a driver for much research in psychotherapy. One widely-held explanation is that it is factors that the therapies have in common that are important. Such factors include the therapeutic alliance, hope, a time to focus and normalisation (Cooper, 2008; Budd & Hughes, 2009). There is less agreement however on the extent to which these factors explain everything, with some authors believing that the relationship is everything (e.g. Haugh and Paul, 2008) and others, notably the CBT community, holding that the common relationship factors are necessary but not sufficient (Budd and Hughes, 2009).

This rather unfortunate state of affairs has much to do with our lack of knowledge about how clients heal at the mechanistic or neurological level. By *healing* is meant a change in the pattern of neuron connectivity in the brain which enables a better level of functioning as a person in the world; this is explored further in Chapter 2. The present project is based on the idea that if we understood more about psychological healing in mechanistic terms, then we might be able to say something more definite about the extent to which the *specific* factors have a role to play. A neuroscientific perspective might, for example, identify different routes to the same goal of

¹ From Lewis Carroll's "Alice in Wonderland" where the Dodo bird pronounces that all have won and must have prizes.

psychological healing. A comparison with drug therapy supports this line of thinking: it is normal for different classes of drug to have a common therapeutic benefit (McFadden, 2009). There is no mystery or paradox here, as the molecular mechanisms of the different drug classes are well understood and it is recognised that different mechanisms can lead to a common therapeutic outcome.

Neuroscience and psychotherapy

It is hard to think of a healing profession that is as divorced from its underpinning science as that of psychotherapy. Probably the main reason for this state of affairs is that, until recently at least, our level of scientific understanding of the brain has not been very informative to psychotherapists. Freud reached this conclusion when he decided to give up his “Project” to unify psychotherapy and brain science (Cozolino, 2010). Not only has the brain been historically hard to access experimentally but also each person’s brain is unique. It is also in large measure a *social* brain, whose intricate network of neuronal connections is continuously being sculpted by each personal and environmental interaction. Reading this dissertation will change the structure of your brain; and if this suggestion surprises or outrages you, then the emotion you feel will reinforce the neural connections that will more strongly encode the suggestion and make it harder to forget.

The inaccessibility, complexity and uniqueness of the human brain has meant that *non-biological* paradigms have been more attractive for framing the various approaches to psychotherapy. These paradigms have been useful in underpinning therapies which are effective, as we shall discuss later. Indeed the dominance of the post-modernist philosophy in the second half of the twentieth century has been instrumental in bringing about hundreds of different psychotherapeutic models. One might imagine that this level of fragmentation, unparalleled in the healing professions, might not have existed had there been firmer understanding of the underpinning neuroscience.

This study recognises that the relevant neuroscience is still in its infancy; but that it is perhaps timely to engage more fully with what *is* available. To the author’s knowledge, this is the first study to use a neuroscience perspective to understand the equivalence paradox.

Objectives and scope

Attempting an intersection of the whole of neuroscience with the full breadth of the different therapeutic approaches would be an ambitious undertaking. To simplify matters, I have limited the scope to an understanding of the equivalence of person-centred therapy (PCT) and cognitive-behavioural therapy (CBT). The rationale for this choice is that i) CBT is widely regarded (especially in neuroscientific circles) as the gold standard for psychotherapy, and ii) my personal therapeutic approach is one of a person-centred counsellor who is increasingly integrating elements of CBT into my practice. I therefore have a personal interest in understanding the mechanism of action of these approaches, something which perhaps could lead to a more productive integration of the two.

The objectives of the project are to bring together relevant neuroscience observations from the literature with views on healing mechanisms from experienced practitioners. From this intersection, the aim is to see if plausible *mechanistic* explanations for the equivalence of PCT and CBT emerge.

The focus of the project then is to try to integrate an *experiential* perspective with a *neuroscientific* perspective. The integration of other perspectives, for example theoretical perspectives and client perspectives, are not in scope; however some reference will be made to theoretical models in Chapters 2 and 5. Compared to looking at a client perspective, an advantage of a therapist perspective is that it readily encompasses a range of different client experiences; it is also easier to carry out. However, the choice of a therapist perspective also had to do with a sub-objective of the project, namely to see whether therapists are able to engage with neuroscience in a meaningful and useful way. If, in future, neuroscience is to guide practice, then it is important that practitioners can relate to it and start to integrate it into their understanding of therapy.

Given the plethora of presentations and diagnoses in psychotherapy, it was necessary to introduce some boundaries here also. The project focuses on two indications – *depression* and *trauma* (trauma being defined in its widest sense to include *attachment trauma* and trauma caused by *abuse*). The choice of a *condition* (depression) and a *cause* (trauma) was deliberate: CBT therapists tend to classify

patients by symptoms, whereas PCT therapists, to the extent that they classify at all, tend to do so by the underlying or initial causative psychological insult. However, this was more than just about being equitable. Although depression and trauma are orthogonal ways of segmenting the population, there is evidence that would suggest most or all depressed clients have an underlying psychological vulnerability and that some form of trauma is associated with this (Bentall, 2004). It is well established that depression is a common outcome of trauma or abuse, either at the time of the insult or later in life when a suitable life-event trigger occurs. A further reason for choosing depression is that it is the condition that best represents the studies that show equivalence between CBT and PCT (see Chapter 2). Finally there is also a growing understanding of depression and trauma at a neuroscience level.

Hypotheses

As this is an exploratory project, it is open to the *inductive* development of whatever hypothesis is most consistent with the data that emerge. However, it is reasonable to state that the project was conceived with two hypotheses in particular in mind:

Hypothesis 1: That PCT and CBT act at different neuropsychological processes and that the modulation of only one process is necessary to alleviate the psychological distress.

Hypothesis 2: That, despite the apparent differences between PCT and CBT, *when examined with a common language and paradigm*, they are both acting via the same mechanism(s).

Neither of these hypotheses negate the *common factors* thinking; rather they deal with what may happen *beyond* the power of the therapeutic relationship, i.e. that which relates to the specific techniques or approaches of CBT and PCT.

Implications of this research project

The common aim of all those who to date have attempted to integrate neuroscience with psychotherapy is to improve therapy (for example, Wilkinson, 2010; Cozolino, 2010). Because psychological theory has developed within different, hitherto largely

non-interacting paradigms it is bewildering and unhelpful to practitioners and policy-makers who want to achieve the best for clients. As Budd and Hughes (2009) point out, arguments about the equivalence paradox and the common factors theory still underpin much of the debate about the superiority of CBT. They also note that the current acceptance of CBT has something to do with its theory base being more scientific than older therapies. It was therefore of interest to see whether or not this project supports this assertion.

Furthermore it was hoped that the outcome of this project may illuminate *how best* CBT and PCT could be used, and how – or to what extent – they might best be integrated.

Language issues

This project demanded working across three different paradigms (humanistic, psychological and neuroscientific), each of which has developed its own preferred language; these issues will be explored further in Chapter 4. My policy for this dissertation is to be pluralistic, sometimes setting my own preferences aside. For example, I will use the term *psychotherapy* rather than *counselling* as it is more inclusive. I will use the terms *patient* and *client* interchangeably and likewise will use both *disorder* and *(psychological) issue*.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This review aims to set the project into context and to provide material for a more general understanding of the neuroscience that is relevant to psychotherapy. This will include short reviews providing neuroscience perspectives on the areas of focus, namely depression and trauma. The literature searches which supported the review are shown in Appendix 1.

The Equivalence Paradox

The evidence that all the main therapeutic approaches are approximately equally effective has been mounting over the last few decades, with support being provided by meta-analyses of the trial literature (Smith & Glass, 1977; Shapiro & Shapiro, 1982; Luborsky, Rosenthal, Diguer, Andrusyna, Berman, Levitt et al., 2002; Walpold, Minami, Baskin & Tierney, 2002). However, some other meta-analyses have concluded that CBT is superior to other therapies for depression (Gloaguen, Cottraux, Cucherat & Blackburn, 1998; Svartberg & Stiles, 1991) and that, more generally, the equivalence paradox is incorrect (Hunsley & Di Gulio, 2002), at least in its broadest sense.

The controversy is fuelled by a number of issues which complicate the interpretation of such studies; these include *researcher allegiance* effects (Luborsky et al., 2002), which were believed to be an issue in earlier studies, and the *aptitude-treatment interaction paradigm*, that is the assumption that clients with particular qualities or characteristics will do better in some types of therapy than others (Cooper, 2008). Budd and Hughes (2009) have recently suggested that the equivalence paradox is “inevitable”; their thoughtful review and assessment points out that randomised clinical trials are unsuitable for psychotherapy investigations, as currently conceived, because key criteria, especially the requirement namely that independent variables

are clearly defined, are never met. They highlight two issues: i) current symptom-based diagnoses are inadequate for defining patient populations, and ii) heterogeneity in treatment method, especially given that both the client and the therapist influence each others' behaviour. In short, the treatment of a heterogeneous group of clients by two heterogeneous therapies will produce a "fog" which prevents the identification of any superiority for a given therapy for a given client type.

Overall, outside of the CBT community, there seems to be broad support for the equivalence of the major therapies; perhaps it is inevitable that occasionally, when patients are sharply defined, some non-equivalence manages to be seen in the fog.

These serious issues notwithstanding, we turn to the focus of this project, namely CBT and PCT. There are three substantial trials which have demonstrated equivalence and which form the basis of this project. All were undertaken in the UK and in NHS settings. The study of Ward and colleagues (Ward, King, Lloyd, Bower, Sibbald, Farrelly et al., 2000), which looked at 464 patients presenting mainly with depression (but some with other difficulties also), showed no statistically significant difference between the PCT and CBT groups. The study of Stiles, Barkham, Elspeth, Mellor-Clark, and Cooper (2006), which was subsequently replicated with a larger sample (5,613 patients; Stiles, Barkham, Mellor-Clark & Connell, 2008), also showed equivalence between PCT, CBT and psychodynamic therapy for patients presenting with a wide range of difficulties including depression, anxiety, interpersonal problems and low self-esteem.

Common factors

As mentioned in Chapter 1, the *common factors* hypothesis has been proposed and developed by numerous workers (Frank, 1981; Greencavage and Norcross, 1990; Asay and Lambert, discussed in Cooper, 2008; Hubble, Duncan and Miller, 1999) to explain the equivalence of the therapies. These factors include the warmth of the relationship, a sense of hope, a time to focus and other factors relating to the relationship and the setting. There is considerable research evidence for the importance of the common factors (see Cooper (2008) for a review).

Cooper and McLeod (2007) have suggested that common factors and treatment procedures are both important. Some evidence for this comes from a study (Clark, Rees & Hardy, 2004) which looked at client perceptions of what was important in CBT; this concluded that therapeutic success depended on both *common* and *unique* factors.

In summary, there is good agreement in the literature that common factors are important in therapy. The divergence relates to the extent to which the *specific factors* are also regarded as important. If one were to judge by clinical practice then one would deduce that nearly all therapists believe in the importance of the unique factors since there is little sign of abandonment of traditional therapeutic approaches in favour of the relationship alone. However, the common factors understanding *is* being reflected in practice; in CBT for example, there is growing emphasis on the therapeutic alliance (Gilbert & Leahy, 2007).

Structure and function of the human brain

A full discussion of this topic is outside the scope of this review; here I focus on aspects which are relevant to the framing and findings of the present project. Appendix 2 provides a guide to some neuroscience terms and a presentation used in this project (see Chapter 3) is also useful; see Appendix 3. A widely respected source for further information is Wikipedia; alternatively standard texts such as that by Nolte (2009) are available.

It is enlightening to view brain structure and function from an evolutionary perspective. MacLean identified three elements or stages of what he termed the *triune brain*: i) the *reptilian brain*, responsible for activation, arousal, homeostasis and reproduction, ii) the *paleomammalian brain* (or *limbic system*) responsible for learning, memory and emotion and iii) the *neomammalian* brain, responsible for conscious thought, executive functions, problem-solving and self awareness (MacLean, 1985; Cozolino, 2010).

The three “brains” need to communicate well with each other, and yet only the neomammalian brain is capable of language and consciousness. The neomammalian brain corresponds to the cerebral cortex which is greatly enlarged in

humans compared to other primates and other mammals. Poor integration across these levels is generally regarded as being a key feature of many psychological problems (Cozolino, 2010; Lux, 2010).

Significantly, brain development *in utero* and in early childhood parallels evolution, with the cortex not developing until after birth and the more emotional and symbol-encoded right cortex developing before the language-encoded left cortex. This aspect of brain development underpins why we have two different memory systems, the familiar *explicit* system and the more shadowy *implicit* system that is a focus of many psychotherapeutic approaches such as PCT (Wilkinson, 2010). The key features of these memory systems may be found in Appendix 3.

As alluded to above, the brain is bilaterally symmetrical, being divided into left and right hemispheres. However there is no redundancy in function: most functions are assigned to just one of these hemispheres and the symmetry disappears at the cellular level. The two hemispheres are linked by a broad bridge-like structure called the *corpus callosum* which carries nerves fibres between them.

At the cellular level, the brain comprises two main types of cell: the *neurons* and the *glial cells*. Glial cells are the “support” cells of the brain; the thinking and memory tasks are carried out by an intricate network of neurons which number some 10 to 100 billion in the human brain. Each neuron computes an output from a large number of input contacts, provided by tree-like structures called *dendrites*. Each input strand and output fibre contacts other neurons to make a complex network; in the total brain there are likely to be in excess of 100 trillion neural connections.

Imaging the brain

Most of our recent knowledge of brain function comes from the burgeoning field of *functional neuroimaging*. Of the various techniques that have been developed, *functional magnetic resonance imaging* (fMRI) is the most powerful technique for cognitive psychology applications (Linden, 2006). The method essentially measures changes in blood flow which correlates with neural activity; this restricts its resolution 2-3mm. Examples of fMRI images are shown in Figure 1.

Images removed for copyright reasons

Figure 1. fMRI brain scans. In this study subjects were asked to put a name to a feeling: activity in specific right ventrolateral prefrontal cortex (RVLPFC) areas increased, while in the amygdala it decreased. See Table 1, item 6. From Lieberman, Eisenberger, Crockett, Tom, Pfeifer and Way (2007).

Neuroscience and psychotherapy

The advent of neuroimaging has led to an increasing interest in the intersection of neuroscience and psychotherapy. As might be expected, the neuroscience of psychotherapy (or neuropsychotherapy as Walter, Berger and Schell (2009) have termed it), can be approached from two directions. From the neuroscience direction, practitioners have used a variety of techniques, but principally imaging technologies, to identify neural correlates of various psychological disorders and their treatment, whereas interested psychotherapists have gleaned the literature to try and make sense of what happens in therapy. Both these approaches figure in this review. It should be noted that the field is in its infancy and psychotherapists are some way from having a complete and coherent picture of what goes on during therapy.

A further way of structuring the field is to consider what brain changes correlate with psychological disorders.

Trauma

The processing of a traumatic event differs markedly from that of ordinary life experiences. Normally the experience would be transferred to the hippocampus which would construct a narrative and a meaning from the experience and transfer the experience to explicit memory in the left brain. In trauma, fear, mediated by the *hypothalamic-pituitary-adrenal* (HPA) axis, causes the *amygdala* to be sensitised and the experience is contained there in a painful and emotional-laden form with no sense of history or realistic narrative.

Over time, stress-related hormones affect neurogenesis, synaptic over-production and pruning, and *myelination* during specific sensitive periods (Wilkinson, 2010), the consequences of which may include a “reduced size of the mid-portions of the *corpus callosum*, attenuated development of the *left neocortex*, *hippocampus* and *amygdala*” along with “abnormal *frontotemporal* electrical activity and reduced functional activity of the *cerebellar vermis*” (Teicher, 2002, cited in Wilkinson 2010, p. 39). Of these substantial changes, the impact on the *corpus callosum* is noteworthy; this “bridge” is responsible for the traffic that relates and integrates explicit left brain logical processing and memories to the emotional and implicit activities and schemas in the right brain. Childhood neglect and, in girls, sexual abuse is associated with a reduced *corpus callosum* of up to 18% (Teicher, 2004).

Trauma may also result from attachment issues. The developing infant brain is highly dependent upon intimate, warm attachment with parents and caregivers and disrupted attachment at this or later stages literally affects the growth of the brain (Wilkinson, 2010). Such disruption is regarded as *attachment trauma* or *developmental trauma*. One fundamental consequence that correlates with attachment trauma is the reduced ability of the child to regulate their own affect; this can persist into adult life leading to psychological rigidity.

Depression

Bentall's model of depression (see Appendix 5, Bentall 2004) suggests three “cognitive vulnerability factors”: a *pessimistic attributional style* that tends to blame self, *stored knowledge about self*, which may be unrepresentative and unfair and iii)

dysfunctional self-standards, that is unrealistic beliefs about how one should be. These factors typically arise early in life and may precede the depressive episode by many years. The vulnerability can be detected with neuroimaging (Mayberg, Liotti, Brannan, McGinnis, Mahurin, Jerabek, et al., 1999) or biochemically (Heim, Mletzko, Purselle & Numeroff, 2008).

The neurobiological basis for depression has been recently reviewed by Sharpley (2010). He argues that the clutch of symptoms can be grouped by underlying causes as follows: i) *dysfunction of the HPA axis*, related to emotional and sympathetic nervous system problems such as excessive guilt and hopelessness, ii) *dysfunction of the thyroid axis* leading to problems with weight loss and sleep patterns, iii) *dysfunction in REM sleep*, and iv) *altered prefrontal cortex activity*, which is associated with mood problems.

Underpinning these changes the *amygdala*, *hippocampus* and *prefrontal cortex* (PFC) are particularly implicated: Figure 2 shows the relationship of these brain regions and the central role of the amygdala in assessing danger and deciding on a response.

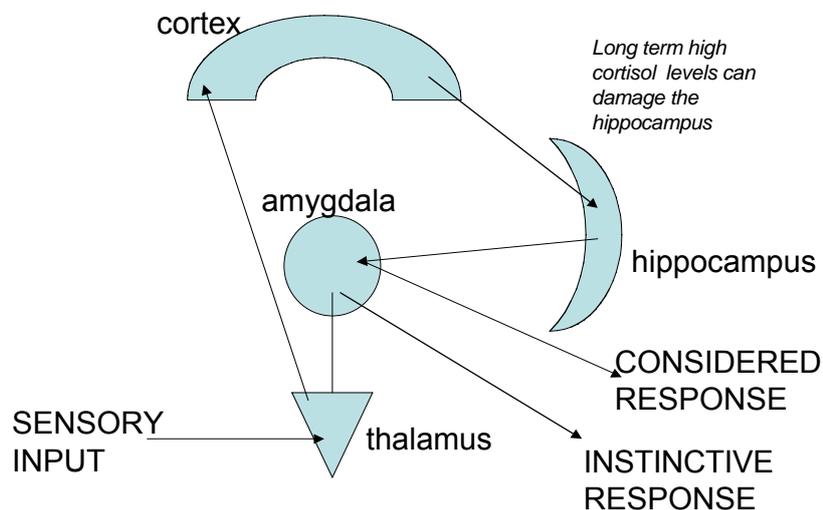


Figure 2. The role of the amygdala in assessing danger and safety

Elevated levels of the stress hormone, cortisol, affect those parts of the brain which are involved in providing a sense of reward; their disruption is associated with the apathy and anhedonia which is a key feature of depression. Cortisol increases

dendritic growth in the *amygdala*, causes apoptosis (programmed cell death) in the *hippocampus* and inhibits normal function in the PFC. There is therefore a potential for increased sympathetic nervous system activity mediated via the *amygdala* and for decreased activity mediated via the *hippocampus* and PFC; in short, a switch towards instinctive behaviour. This overall disturbance of the limbic system can explain the co-morbidity of depression and anxiety. Also of note is the similarity of these changes to those found in trauma and PTSD.

In depression there are also changes in key neurotransmitters, particularly serotonin, noradrenaline and dopamine: such changes have been a particular focus for pharmacological interventions. These are not addressed here but have been considered in a psychotherapy context by Cozolino (2010).

Rebuilding the brain

Cozolino (2010) has provided a comprehensive and compelling study of the neuroscience of psychotherapy. Central to the healing activity, which he refers to as “rebuilding the brain”, is the role of *neuroplasticity* (i.e. the brain's ability to reorganise itself by forming new neural connections) and of *integration* (enhancing connectivity between different regions of the brain). He suggests: “although psychotherapists do not generally think in “neuroscientific” terms, stimulating neuroplasticity and neural integration is essentially what we do” (p. 26). He identifies four factors that would enhance this: i) the establishment of a safe and trusting relationship ii) mild to moderate levels of stress, iii) activation of both emotion and cognition and iv) the co-construction of new personal narratives.

Cozolino also identifies two main pathways for the required integration. Firstly there is *top-down* or *bottom-up* (vertical) integration: the enhancement of connections between the cortex and subcortical regions, thereby enhancing unification of body, emotion and conscious awareness. *Vertical* integration has to do with congruence between the *explicit* and *implicit* memory systems. Explicit memory is about conscious learning and memory whereas implicit memory is about non-verbally encoded memories and feelings which are largely inaccessible to conscious awareness.

Secondly, there is *left-right* or *right-left* (horizontal) integration between the two halves of the brain. This “allows us to put feelings into words, consider feelings in conscious awareness, and balance the positive and negative affect biases of the left and right hemispheres” (p. 28). This last point refers to the observation that to the right brain, with its bias towards prosocial behaviour, assertiveness and connection with others, the glass is half full, whereas to the suspicious right brain, concerned danger and vigilance, the glass is half-empty.

Cozilino (2010) and Lux (2010) believe that an imbalance between the left and right hemispheres (*laterality*) underlies depression and anxiety. Depression (and anxiety) is associated with right hemisphere frontal lobe activation and imaging studies show a shift to greater right hemisphere activity when a subject is thinking about trauma or experiencing flashbacks. Cozolino also points out that the right hemisphere has primary control over emotional self-awareness, and that “because there is so much early, unconscious right hemisphere emotional learning, early negative experiences have a long-lasting yet *hidden* impact on our self-esteem, attitudes and personalities” (p. 107, emphasis added). This neuroscientific insight seems consistent with Bentall’s more psychological identification, referred to above, of an early *pre-disposition* to depression (Bentall, 2004).

Cozolino suggests that “cognitive therapies for both anxiety and depression that utilise rational thought...may work by activating left hemisphere processes to regain lateral balance” (p. 106). He also notes that relaxation training can down-regulate the right brain. Cozolino also contrasts the interpreting and story telling role of the left hemisphere with the emotional and feelings content of the right hemisphere, noting that at the start of therapy the therapist can register a lack of congruence between the two. He adds: “a primary tool across all models of therapy is editing and expanding the self-narrative of the left hemisphere to include the silent wisdom of the right.”

Wilkinson (2010) has provided an integration of neuroscience and psychotherapy from a psychodynamic perspective. Her early chapters highlight the crucial role that parents and care givers have in early life in quite literally “growing the brain” of the infant. One key skill acquired from parents in the very early years is the ability to control one’s own level of affect; children who have limited abilities in this regard are

at risk of psychological difficulties later in life. She suggests that this ability can be recovered in therapy by the therapist showing how affect can be regulated.

CBT and neuroscience

Direct imaging of the impact of CBT on the brain has revealed changes in activity levels in brain sub-regions in various indications such as social phobia, spider phobia, OCD and depression (Linden 2008). Treating depression, CBT has been shown to be associated with *decreased* activity in the orbitofrontal cortex and the left medial prefrontal cortex and also with *increased* activity in the right occipital-temporal cortex (Kennedy, Konarski, Segal, Lau, Bieling, McIntyre & Mayberg, 2007). The authors point out that the orbitofrontal cortex is associated with emotional processing biases in depressed patients, which therefore suggests CBT-treated patients have reduced emotional processing biases. Whether this is cause or effect however is not clear. Perhaps more interesting is the finding that dorsomedial prefrontal cortex activity is *decreased* with CBT (Kennedy et al., 2007, Goldapple, Segal, Garson, Lau, Bieling & Kennedy, 2004); this area is involved in the recollection of affect-laden personal life events, attention to subjective feeling and processing of emotion-laden meanings. It is not clear whether CBT causes these processes to be specifically inhibited or simply not attended to. Whichever is the case, Toomey and Ecker (2009) consider that such “cognitive regulation” is “an internally oppressive strategy that is inherently limited in effectiveness because it does not actually eliminate the roots of symptom production” (p. 131).

Goldapple et al. (2004) found that the SSRI, paroxetine, decreased hippocampal activity whereas CBT increased it. A difference between the neural correlates of CBT and drug therapy was also found by Kennedy et al. (2007) but in this study the difference played out in the *subgenual cingulate cortex*; metabolism in this area was increased in CBT, but decreased in drug therapy. A hyper-active subgenual cingulated cortex, a region associated with feelings of sadness, is a characteristic of depressed persons (Mayberg et al., 1999), so this result is somewhat curious (Toomey and Ecker, 2009).

Overall the imaging work lends support for the psychological model of counteractive change in CBT whereby cognitive work in the cortex acts in an executive “top-down”

way to affect mood and the other symptoms. However, imaging studies are not without their interpretive problems; Linden (2008) has suggested that associating depression with particular brain areas may be too simplistic.

PCT and neuroscience

There are as yet no published studies reporting brain changes which correlate with therapeutic effect in PCT. However, several writers have examined the neuroscience field more broadly and made connections between neuroscience and their approach (particularly psychodynamic therapists). A recent paper by Lux (2010) achieves this in a comprehensive way for PCT. He identifies a number of linkages: i) the *implicit systems* of the right brain achieve what Rogers described as the organismic valuing process, ii) the implicit right brain's emotional contribution to everyday decision making corresponds to the PCT's emphasis on gut feelings, iii) *concordance of processes between explicit and implicit systems* is important for good mental health, an idea presaged by Roger's concept of congruence (and his recognition that clients present in a state of incongruence), iv) the existence of *mirror neurons* underpins the concept of empathy and provides a plausible mechanism for how therapists feel their client's feelings, vi) *polyvagal theory* provides an explanation for how clients, once they perceive empathy, activate their social engagement system which engenders calmness, vii) the naming of feelings, a feature of PCT, activates brain regions which have the potential to attenuate the activated emotions, viii) *global workspace theory* could underpin the deconstruction of the client's world view and internal assumptive framework, ix) *oxytocin* release is postulated to be behind the role of unconditional positive regard in promoting trust, a sense of safety and empathic interaction. Many of Lux's linkages are not unique to PCT.

An earlier paper (Motschnig-Pitrik & Lux, 2008) looked at Roger's theories in the light of Damasio's increasingly accepted theory (Damasio, 2003) which highlights the central role of emotions and feelings in decision making and human functioning. They find striking parallels which provide general support for the notion that PCT's emphasis on emotions and feelings has a neuroscience basis. The neuroscience support for the role of feelings and emotion in psychotherapy has also been noted by Carter (2003).

Common factors and specific mechanisms

Much of the above discussion would support the view that there are common factors at work in psychotherapy which provide the right conditions for clients to reconfigure their neural networks, that is to “re-grow their brain” and thereby achieve a better level of functioning.

Unfortunately, there are still not that many neurobiological studies that would reveal specific mechanisms in therapy; for depression these are rather confined to CBT and drug therapy. In future, one might expect imaging of other psychotherapy approaches in action to show significant differences, at least in the actual sessions where different “work” is undertaken, but this remains to be seen. For now we have a collection of indirect observations, mentioned in the above review, which might be related to different things happening in different therapeutic approaches.

CHAPTER THREE

METHODOLOGY

Philosophical stance

A key challenge of this project is that it seeks to integrate across three different paradigms, namely humanistic and phenomenological (for PCT), psychological (for CBT) and scientific / positivist (for the neuroscience). Looking at the two extremes of this spectrum, the challenge could be defined in terms combining scientific discipline (neuroscience) with a profession (psychotherapy) where post-modernism has dominated since the time of Freud and Jung. The former is often associated with *quantitative* research which aims to uncover a single truth, whereas the latter, with axiom that there are multiple, equally valid views of what is truth, is associated with *qualitative* research (Maykut & Morehouse, 1994). However, qualitative research does have a role within the scientific paradigm (Elliott, Fischer & Rennie, 1999) and is useful for theory development (McLeod, 2003).

The present project falls into the category of mixed methods or *pluralistic* research (McLeod, 2003). McLeod identifies a number of ways in which qualitative and quantitative research may be combined, one of which suggests that “qualitative research may provide background information, act as a source of hypotheses...” (p.182). This captures the essence of what is attempted in this project. More specifically, the project aims to use *qualitative* research to capture views of therapists (on healing processes) and then, with the aim of moving towards a single, scientific “truth”, to make sense of this dataset in the light of a scientific² “dataset” (neuroscience), to inductively identify a hypothesis (to explain the equivalence of CBT and PCT). Within this framework it is worth noting that the first phase, namely the capturing of views, is purely qualitative. The second phase (induction) and the third phase (hypothesis generation) are both also qualitative but

² By way of a caveat, *some* of the neuroscience elements considered in the project include interpretations and views as well as quantitative data. They are based however on quantitative data.

they need to take place within a scientific paradigm aimed at identification of one or more plausible hypotheses. The unifying paradigm of the project then is fundamentally scientific.

Reflexivity

In qualitative research it is important that the researcher identifies his own stance and seeks, by a process of *epoche* (Maykut & Morehouse, 1994), to be aware of prejudices, viewpoints and assumptions, seeking always to minimise their impact. At this stage I should therefore disclose that I am a scientist by background and that I take issue with McLeod's view (2003) that the scientific method is inappropriate for the field of psychotherapy, an assertion which I think is now outdated. A fuller discussion of reflexivity is provided in Chapter 5.

Ethical considerations

Before starting the project, approval was obtained from the Research Ethics Committee of the University of Chester. Aspects identified were:

1. The need to comply with the Code for Practice for ethical research of the University of Chester. This covers general issues such as informed consent, respecting diversity, research integrity and research governance (Bond, 2004).
2. The possibility that workshop participants might contribute identifiable client material.
3. The possibility that insights generated at the workshop might be regarded as useful intellectual property and give rise to ownership issues.

These issues were addressed by means of a Participation Agreement which all participants (except the observer) were asked to agree to and sign before taking part. The Agreement for the therapist participants is shown in Appendix 6.

These arrangements meant that the workshop generated no ethical surprises and no other ethical issues were identified in the course of the work.

Research design

It seemed attractive to use the group of therapists not *just* to contribute their views but also collectively to make their own linkages with the neuroscience and move towards hypothesis construction. As well as reducing the scope for personal bias, a further advantage of this would be the greater intellectual and experiential effort that could be brought to bear on the task. The advantages of a team approach to *inductive* data analysis has been recognised by Maykut & Morehouse (1994).

These considerations suggested a focus group or workshop format. Focus groups have a good track record for theory development using *inductive* processes (Fern, 2001). In this framework one can allow interactive processing of the experiences, intense data immersion, further development of the thinking and *in situ* triangulation of emerging findings.

Workshop composition

The group comprised 3 CBT therapists, 3 PCT therapists, 2 integrated therapists, 1 neuroscience expert, 1 facilitator and 1 observer. The rationale for this composition was as follows. The six CBT or PCT therapists formed the core of the exercise, contributing their views on healing processes. The two integrated therapists were intended to add diversity and to promote group cohesion by reducing the possibility of a tribal group dynamic forming. The role of the academic neuroscience expert was to inform the group on the relevant basic neuroscience and to ensure that the group remained grounded in neuroscience reality. The conduct of the workshop is the responsibility of the *facilitator* or moderator (Fern, 2001), supported by an *observer*. In this study, the observer's role was to point out any issues with respect to group participation, accuracy in data acquisition and to generally act as a second pair of eyes and ears, and to help ensure "fair play".

Selection criteria for the CBT and PCT therapists were: i) should practise a "pure" form of either CBT or PCT, ii) should be experienced, i.e. >500 client contact hours and 5 years of practice, and iii) should have an open-minded interest in the mechanisms of healing and be prepared to engage with neurobiological research outside their traditional theory base.

Workshop structure

In order that the workshop should be attractive to participants it was decided to a) market the workshop, in part at least, as a continuous professional development opportunity, featuring the neuroscience expert, and b) limit its duration to 4.5 hours and to position it in the day around lunch (10am to 2.30pm). A flyer for the event is provided in Appendix 7. It was recognised that 4.5 hours was a very short period of time for such an ambitious workshop and a programme for the event was crafted to make best use of the time (see Appendix 8).

Recruitment of participants

The original intent for recruiting therapist participants was to advertise in professional journals and use the “snowball” method (McLeod, 2003) as a back-up. However, timing considerations suggested that the snowball method would be more effective and this was the method that provided all the participants. The search, based mainly on personal contact and email distribution of the flyer, was focussed in and around the Cheshire area using NHS contacts for CBT therapists and those previously associated with Chester University for the PCT and integrated therapists. Key attributes of the therapist participants are provided in Appendix 9. With the snowball method there is a clear danger that the set of recruits may have low diversity. It was believed that the majority of CBT therapists are employed by the NHS and that most therapists are female; in these respects the set shown in Appendix 9 could be said to be fairly representative.

There were two broad options for the academic expert: a) a known researcher in the field of the neuroscience of psychotherapy or b) a more general neuroscientist with a broader base and an ability to communicate to non-scientists. Option a) looked less attractive since it was feared that the individual might be too focussed on promoting their own theories; there was also an issue with availability. So option b) was selected, and as a result of networking, Dr Nicola Edelstyn, Senior Lecturer at Keele University, was identified. Dr Edelstyn’s biography is provided in Appendix 10.

The researcher took the role of facilitator; this was considered to be important to ensure that the workshop pursued the researcher's objectives in what was a condensed timescale.

The *observer* selected was a non-practising, counselling diploma graduate currently working as a teacher. She was sufficiently conversant in psychotherapy to follow the debate but did not have any therapeutic allegiances that might lead to bias; she was also experienced in group work.

Neuroscience inputs

Neuroscience inputs to the workshop comprised a) a literature review (an early version of Chapter 2), b) a presentation by Dr Edelstyn on the structure and function of the brain, and c) a compilation of 20 "neuroscience elements" (Table 1).

The selection of neuroscience elements was taken from a search of the primary literature and from recent reviews by Cozolino (2010) and Lux (2010)³. There were no formal selection criteria for inclusion in this list; most findings that were judged to be interesting or provocative were included.

The slides used by Dr Edelstyn are given in Appendix 4. Two video clips illustrating the development of the brain were also used (for details, see Appendix 4). Key elements conveyed in the presentation were: brain structure and function, evolution and development biology, neural networks and synapses, neuroplasticity and the neurochemistry of depression.

With respect to the 20 neuroscience elements, it is important to state that the main intent for these elements was to stimulate debate. Given the time constraints, in the first instance, there was little scope for critiquing whether the elements had been understood or used correctly. However, in the open discussion phase we were able, with the help of the academic expert, to delve deeper into selected elements, to ensure that they were being used correctly, with a focus on those that seemed to be the most pertinent for the conclusions that were being drawn.

³ These authors are cited in Table 1 where they offer a useful description or interpretation.

Table 1. The “neuroscience elements” selected for this study

	<i>Short Title</i>	<i>Description of Finding</i>	<i>References</i>
1	Mirror neurons enable empathy	Neurons which fire regardless of whether the action is performed by self or by another. Enables us to sense what an experience is like for another.	Ferrari and Gallese, 2007; Cozolino 2010.
2	Mirror neuron activation correlates with theory-of-mind activation	The theory-of-mind regions of the brain are able to distinguish non-self from self. Facial gestures of others were found to activate this region when mirror neurons are firing; this generates a feeling of empathy.	Schulte-Rüther et al. 2007; Lux, 2010.
3	Empathy is perceived by client physiologically	The level of empathy between client and therapist was found to correlate with increases in skin conductance in both.	Marci et al., 2007.
4	Vagal activation leads to social engagement system and calmness	Empathic understanding activates the vagal system (a component of the autonomic nervous system) which supports social engagement, affecting voice and facial expressions, leading to calmness and self-soothing.	Lux, 2010.
5	Oxytocin release, bonding and trust	Oxytocin promotes feelings of bonding and warmth. Induced by a sense of connectedness, it deactivates the amygdala, reducing stress and anxiety.	Lux, 2010.
6	Naming feelings leads to attenuation of emotions (see Fig. 1)	An imaging study has shown that putting a name to a feeling activates cortical regions which are associated with a decrease in amygdala activation, reducing emotional reactivity.	Lieberman et al., 2007.
7	Safety, cortisol levels and relaxation	Cortisol is the “stress hormone”; it is reduced in psychotherapy. Cortisol also sustains depression via direct effects on the limbic system.	Sharpley, 2010.

8	PFC activity reduced (in CBT). Decreased ruminations.	Imaging studies of depressed subjects show reduced activity in the pre-frontal cortex (PFC) after CBT sessions. This is believed to be due to a reduction in (unhelpful) ruminations.	Goldapple et al., 2004; Kennedy et al., 2007.
9	Increased hippocampal activity (CBT)	Imaging studies of depressed subjects show increased activity in the hippocampus as a result of CBT.	Goldapple et al., 2004.
10	Increased activity in SCC (in CBT)	Imaging study of CBT-treated depression patients shows an increase in activity in the subgenual cingulate cortex (SCC), a surprising finding given that the SSC is associated with feelings of sadness.	Linden, 2008; Kennedy, 2007.
11	High activity in SCC / PCC boundary predicts CBT failure	Hyperactivity in the pregenual cingulate cortex (PCC) / SCC boundary is a marker of non-responsiveness to CBT therapy (and drug therapy) in depression.	Konarski et al., 2009.
12	Strong left cortex language correlates with CBT success	Studies showing that clients with demonstrable (left cortex) language skills do better in CBT.	Cozolino, 2010.
13	Stimulation of left cortex balances right-left affect	Overall affect is a balance between the negative right cortex and the more positive left cortex. Stimulation of the left cortex brings about a more positive mood.	Cozolino, 2010.
14	Implicit system has strong role in decision making	Increasing realisation of the role of the implicit (unconscious) system in decision-making, based on the work of Damasio.	Cozolino, 2010; Lux, 2010; Motschnig-Pitrik & Lux, 2008; Damasio, 2003.
15	Top-down (cortex – limbic) integration	Various studies suggest that neural integration between the cortex and the limbic system correlate with psychological health.	Cozolino, 2010; Lux, 2010.

16	Left-right integration	Various studies suggest that neural integration between the left and right cortices correlate with psychological health.	Cozolino, 2010; Lux, 2010.
17	Promotion of neuroplasticity by SSRIs	Perhaps a more compelling explanation for the impact of SSRIs, more consistent with their time course of action. Based on studies in mice. Included in this list as many depressed clients are on SSRIs.	Sillaber et al., 2008.
18	Reduction in hippocampal activity with SSRIs	Imaging study in depressed patients treated with SSRIs show reduced activity in the hippocampus (the opposite to CBT).	Goldapple et al., 2004.
19	Like parents, trusted others can help regulate affect	Parental interactions in early childhood are crucial in developing the ability to regulate affect; trusted psychotherapists are able to do the same.	Cozolino, 2010; Wilkinson, 2010.
20	The “autobiographical self”	A concept which forms the pinnacle of Damasio’s neurobiologically-based description of “self”, referring to the constantly-updated conscious assessments of explicit and implicit memories.	Damasio, 2010.

Project workflow

An overall schema for the project activities is given in Figure 3. Before the workshop participants were asked to spend some time reflecting on their experiences to identify what they thought were the key healing events, with depression and trauma as the focus. To assist them in this preparation some guidance notes were supplied (Appendix 11). A key feature of the guidance was the request that participants use their own preferred language rather try to bend their experiences to fit pre-conceived ideas of what the neuroscience might suggest. Thus prepared, participants were able to contribute their experiences at the workshop.

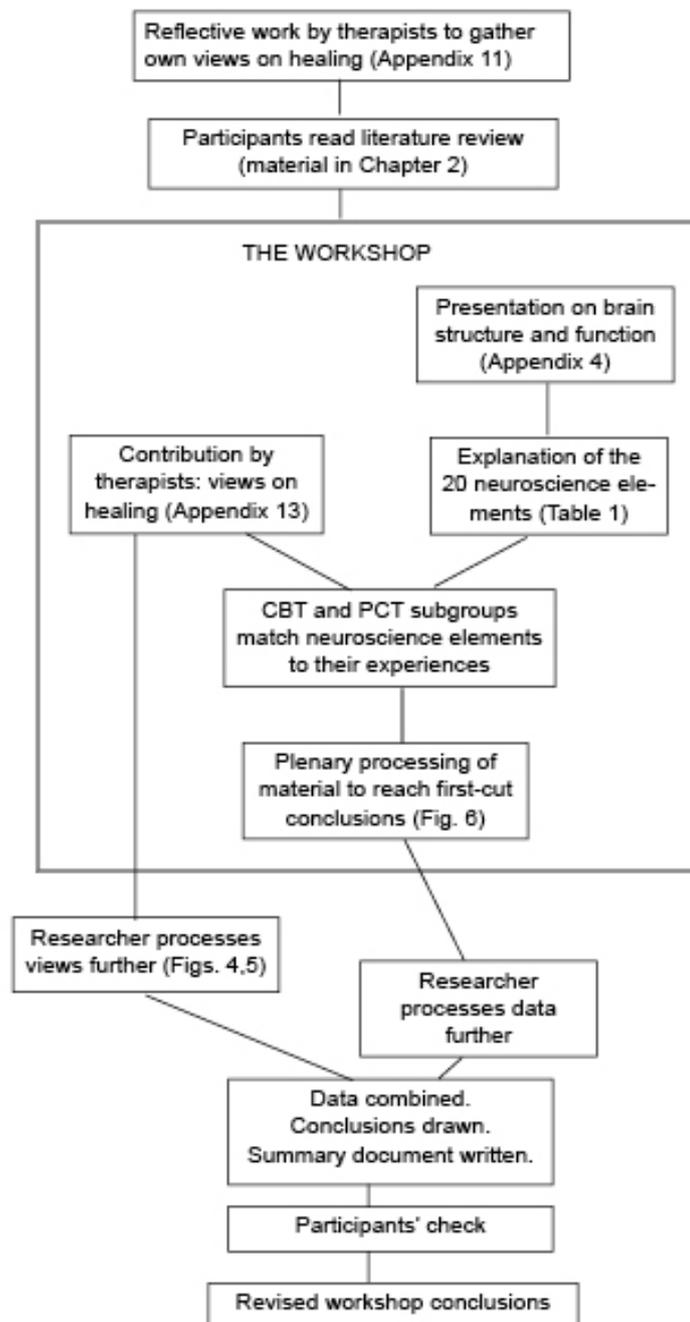


Figure 3. The project workflow

As mentioned above, participants were also asked to read a literature review on the neuroscience of psychotherapy, including some notes on depression and trauma. This was a shorter and earlier version of the literature review provided in Chapter 2 (and it included Appendix 2); it was supplied alongside some material explaining how this related to the workshop. So that participants should not be influenced (initially at least) by the neuroscience, they were asked to do the reflective work *before* reading the literature review.

At the workshop the order of proceedings was as follows:

1. The presentation, “Growing with your Brain”, by Dr Edelstyn (Appendix 4), followed by questions.
2. A systematic review of the 20 selected neuroscience elements, aimed at ensuring that the participants understood and were comfortable with them.
3. Contributions from the therapists on their experiences of healing: each participant took 2-3 minutes and their contributions were captured on a flip chart, focussing on the actual healing events.
4. CBT and PCT subgroups then considered the neuroscience elements and decided which ones might be at work in their therapy, and how. Each subgroup was supplied with a flip chart, a list of neuroscience elements and the relevant flip chart capturing the experiences from the previous session. During the lunch break that followed, the numbers of the elements used were collected and used to form a simple Venn diagram for further discussion.
5. The full group then considered the outputs and generated a more organised scheme for the neuroscience elements. The group was asked to consider other aspects such as a) healing processes between therapy sessions, b) client-to-client variation, c) order of healing events, d) is it complete healing or symptom reduction? The group was facilitated towards a tentative conclusion with space for individual conclusions to be voiced. Finally feedback on the workshop was sought, particularly with respect to whether the conclusions were thought to have been affected by the design or conduct of the workshop.

The leading and facilitation of the workshop was augmented by explanatory slides which are provided in Appendix 12.

Post-workshop processing followed the scheme shown in Figure 3. and will be described in more detail in the next Chapter.

The Workshop Setting

The room selected for the workshop was spacious, naturally lit, with flexible seating, four flip charts and digital projection equipment. Lunch and beverage breaks provided opportunities for informal discussion and a chance to reflect on the progress of the workshop.

CHAPTER FOUR

RESULTS, WORKSHOP CONCLUSIONS AND DISCUSSION

Introduction

The workshop proceeded smoothly and the plan shown in Appendix 8 was followed fairly closely. All the therapists reported that they had carried out the preparation work set for them. The group engaged willingly with the neuroscience that was presented, finding the neuroscience interesting and relevant. There were no significant paradigm clashes or signs of tribalism and participants approached the workshop with an open and constructive mind.

Extensive use was made of flip charts and the transcripts of these, made the same day, are provided in Appendix 13. In keeping with the exploratory nature of the workshop, methods of treating and analysing the data were not fixed in advanced but identified intuitively with group support.

Language issues

Despite concerns that working across three different paradigms (humanistic, psychological and neuroscientific) would present difficulties with respect to language and culture, there were in fact few such difficulties. All participants showed respect for the different paradigms and were not intimidated by unfamiliar language. Only a few terms caused confusion, for example, “rumination”, and “cognitive” needed clarification.

Therapists' experiences: results

Each therapist was given about 3 minutes to outline their view of what are the key healing moments in therapy. These were captured on a flip chart and used as input material for the “matching” exercise (see below). There was no further processing of

this material at the workshop, but they were subsequently analysed in two ways, as follows.

Firstly a *word cloud* or *tag cloud* for each group was created on-line, using “TagCrowd” (Steinbock, 2011). The word cloud is a content analysis method (McNaught & Lam, 2010) which gives a useful immediate impression of content; they are especially useful when comparing two different sources. The tag clouds are shown in Figure 4.



Figure 4. Tag clouds for the therapist experience activity. Upper, PCT; lower, CBT.

Secondly, because we are interested in what clients *do* in therapy, the flip chart material was analysed by extracting and comparing the *verbs* used. Some verbs needed re-constructing so that they reflected what the client did, rather than the therapist. These were then compared in a matrix; see Figure 5.

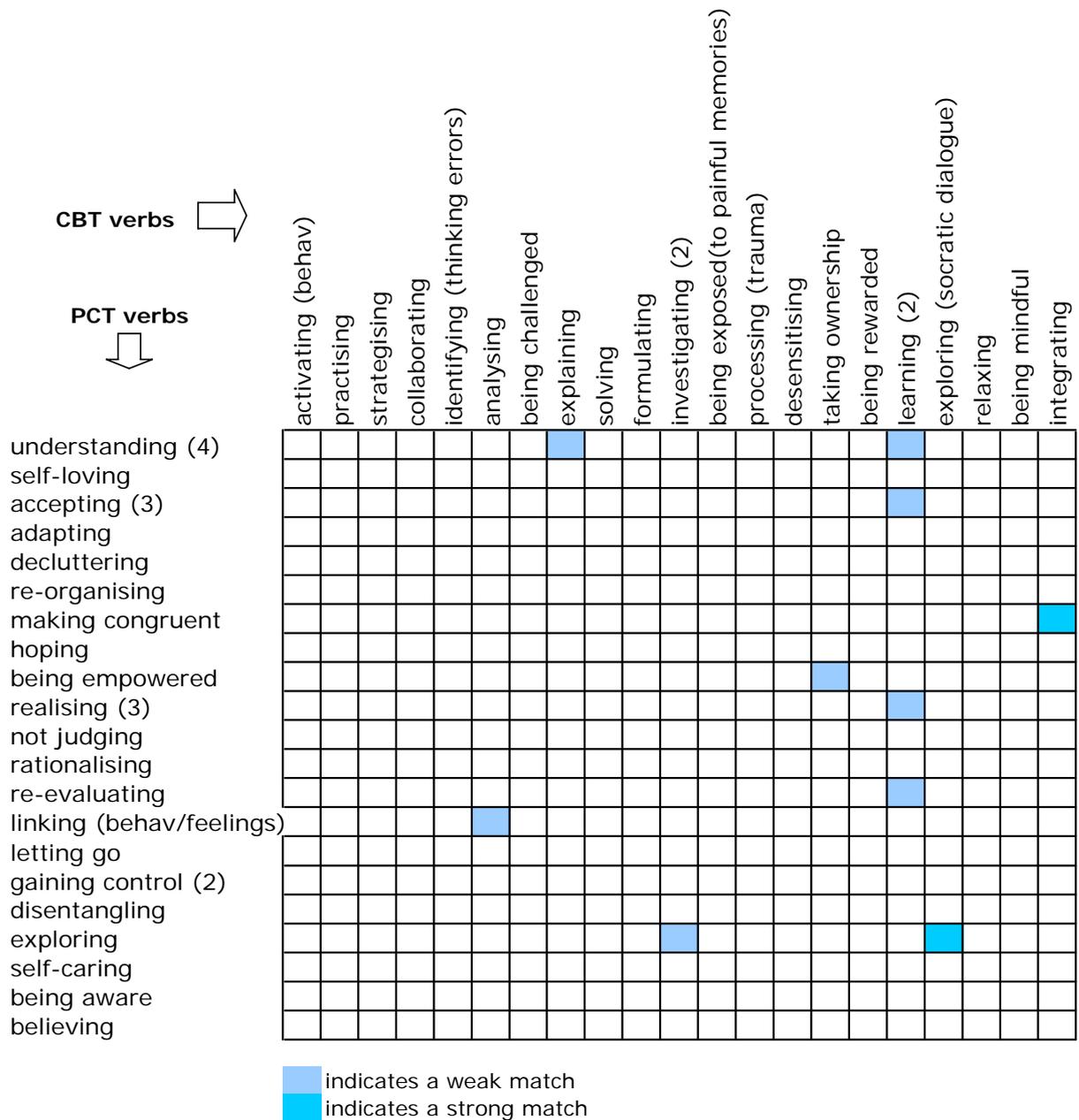


Figure 5. Verb matching matrix. Numbers in parentheses refer to the number of mentions.

Therapist views: discussion

The tag cloud analysis (Figure 4) shows that CBT and PCT therapists use rather different sets of words to describe healing: areas of overlap are quite small, with “self” being the main word held in common.

This lack of commonality was also evident from the verb analysis (Figure. 2). 21 “PCT verbs” were compared with 21 “CBT verbs” and intersections assigned as either strong matches or weak matches. CBT therapists associated healing with *activities* (collaborating, strategising, practising, activating behaviours, identifying, analysing, explaining, solving, formulating, investigating, desensitising) whereas PCT therapists identified verbs more associated with *feelings and inward processes* (accepting, adapting, decluttering, re-organising, making congruent, realising, rationalising, re-evaluating, letting go, self-caring, being aware, self-loving). Areas of overlap were low with 14/21 PCT verbs having no CBT equivalents and 15/21 CBT verbs having no PCT equivalents.

At this point it is reasonable to ask whether the differences are due to differences in the language and culture of the two approaches, rather than any real differences in what happens. The match scoring used was intended to allow for this. A full linguistic analysis of these data is beyond the scope of the project; this would require a re-examination of the context of the use of the verbs. However, it could be argued that the weak matches identified are generous assignments. Inspection of Figure 5 suggests that it is hard to find further matches, even using very broad interpretations.

In both analyses, the words used are consistent with the theory of the two approaches, with PCT emphasising inner processes (Lux, 2010) and CBT emphasising cognitive and behavioural changes (Wills, 2008). It seems therefore that, in terms of what is “done” in therapy, different brain processes are at work for much of the time. This does not necessarily imply that the end-points of the two therapies are different, but if they are the same, then the route to getting there differs substantially.

Matching neuroscience elements to practice

The CBT and PCT sub-groups were asked to identify which neuroscience elements were relevant to their therapy. Each participant was provided with a numbered list of elements and these numbers were the currency used for the discussion. The neuroscience elements, discussed in Chapter 2, are provided in Table 1. The workflow that emerged thereafter was as follows:

1. extraction from each group of the neuroscience elements used
2. construction of a Venn diagram to identify common elements
3. expansion of the Venn diagram to identify putative “common factor” elements and “common goal” elements (the “scheme”)
4. group refinement of selection and re-organisation
5. group discussion of the scheme, focussing on similarities and differences in CBT and PCT.

The final scheme that emerged is shown in Figure 6.

Of the 20 elements provided, 3 were not used. Of the 17 used, 15 were selected by both groups. Of these, 4 related to the establishment of the therapeutic relationship and 4 to what might be regarded as “common goals”, i.e. promoting neuroplasticity to achieve vertical and horizontal integration and an updating of the autobiographical self. Of the 9 elements ascribed to the body of the therapeutic work, 7 were identified by both groups (the “common method set”). Just 2 elements were left as unique.

It should be noted that the elements were used loosely, often beyond the boundaries of the original literature observation. As an extreme example, the element “promotion of neuroplasticity by SSRIs” was taken as promotion of neuroplasticity generally. This tolerance was deliberate in order to foster a free-thinking, creative environment. More critical assessment of the matches came later in plenary discussion and post-workshop processing.

“Common Goal” elements

The group was attracted to the notion that *integration*, both vertical and horizontal, was associated with good psychological health and therefore could be considered as a goal for therapy. The process for arriving at greater integration is neuroplasticity and it was considered likely that this is facilitated by both therapies. The other aspect that both groups identified was the updating of the *autobiographical self*; it is interesting to note that “self” was one of the few words held in common in the therapist experiences exercise (Figure 4).

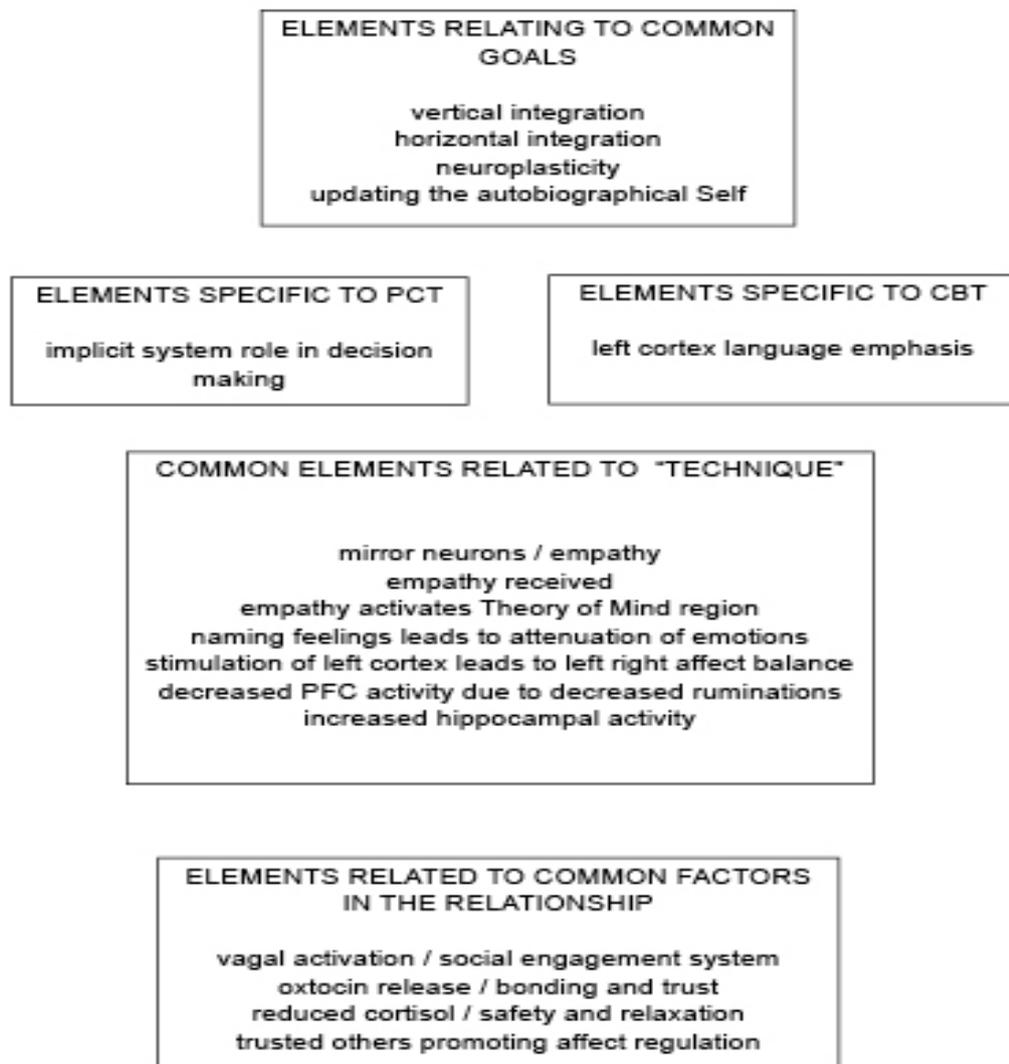


Figure 6. Final organisation of the neuroscience elements

“Common Technique” elements

The elements relating to empathy could have been classified under common factors, but the group wanted to acknowledge that PCT uses deeper levels of empathy beyond that required to establish a therapeutic relationship, and that empathy is a means for accessing deeper material from the implicit system.

The group was intrigued to discover that there is a neuroscience support for the observation that naming feelings can reduce their emotional power, something reported by both CBT and PCT therapists.

The element *increased left brain activity balances right brain affect bias* was originally only identified by the CBT group but the PCT group later wanted to include it.

The element *reduced prefrontal cortex activity possibly related to decreased ruminations* was strictly a CBT related observation but was claimed by both groups. It prompted a discussion on whether rumination reduction occurred in the same way in CBT and PCT. It was thought that often in CBT ruminations are decreased by the need to focus on learning activities which leads to a breaking of the cycle which maintains the ruminations. In PCT the work might involve “getting underneath” the ruminations, i.e. moving towards deeper causative material.

The element *increased hippocampal activity* was originally only identified by the CBT group as the neuroscience observation applied only to CBT. Upon discussion however the group realised (with neuroscientist backing) that increased hippocampal activity must also be taking place in PCT: any activity involving memory recall and re-evaluation must involve the hippocampus. Overall, this element is perhaps uninformative.

“Common Factors” elements

There was little disagreement about the assignment of the four elements associated with building the therapeutic relationship (see Figure 6). The group valued the

understanding of the neuroscientific basis of the power of the therapeutic relationship.

Unique elements

Just one element, *the role of the implicit system in cognition*, was identified by the PCT group but not the CBT group. This may reflect a PCT emphasis on developing the relationship between feelings and cognition. The single item identified as unique to CBT was that strong language ability correlates with CBT success. It was regarded as interesting but the significance attached to this was low (especially in the absence of a PCT comparison).

Group conclusions

The above findings initially suggested that, from a neuroscience perspective, similar processes are at work. This seems particularly true for the “therapeutic relationship set” and the “common goals set.” Group discussion did however elicit some important differentiating comments on the “technique” set. It was agreed that the empathy-related elements were more dominant in PCT which generally employs deeper levels of empathy. It was also suggested (and supported by Cozolino, 2010) that CBT emphasises activities which involve stimulation of the left cortex which can bring about left-right affect balance.

General conclusion from the matching exercise

Overall then, this exercise indicated a considerable degree of commonality between CBT and PCT with respect to the therapeutic relationship (deemed important for both but emphasised more in PCT) and the final outcomes of therapy. With respect to the therapeutic method there were some common elements but also some which were distinctive or emphasised more in one therapy rather than the other. Very broadly this was consistent with the cognitive and behavioural emphasis of CBT and the PCT’s emphasis on the relationship, empathy and the accessing of the implicit system.

Other matters arising

It was accepted that some healing takes place in between sessions and that attention needs to be paid to this. In CBT the work is more structured with homework agreed with the therapist. The homework can re-inforce the learning from the sessions, further challenging previous assumptions and habits. Experimentation is encouraged which gives the client a sense of ownership and power. Giving feedback to the therapist provides a sense of reward. In short, the work involves active engagement with the environment. In PCT, what happens between sessions is varied and unstructured. It is believed to involve conscious and unconscious processing but with the emphasis on the latter. Overall then it seems that CBT and PCT differ markedly in terms of inter-session healing activity.

It was pointed out that CBT is increasingly integrating other approaches (such as the Rogers' core conditions and mindfulness approaches) and that this makes it increasingly difficult to compare CBT and PCT. In arriving at the above conclusions the group was thinking more in terms of the "classical" CBT approach.

The workshop made the participants more aware of the neuroscientifically-distinctive elements of the therapies and underlined the opportunities provided by more integrative working. This was particularly seen as a timing opportunity, namely the ability to provide what was appropriate to the client at any particular time.

Validity of workshop output

This section deals with validity aspects associated with the workshop; overall *project* validity is examined in the next chapter.

One aspect of validity was addressed directly at the workshop. At the end participants were asked if they felt that the conclusions of the workshop could have been influenced by any aspect of the design or conduct of the event. The initial silence indicated that there were no burning or obvious failings identified. However, there were three responses. Firstly, someone speculated whether a different result would have been obtained if the CBT and PCT groups had been more separate. This question was left unanswered as several participants responded with

statements valuing the close interaction across the disciplines, saying this was useful in provoking the thinking. Secondly, one of the CBT therapists questioned whether the other two CBT therapists were typical in that they both had backgrounds as “counsellors’ (that is previous exposure to PCT). This highlights the recruitment difficulties when there are only three CBT places designed into the process. No data was offered or sought on the pre-CBT backgrounds of CBT therapists currently practising in the UK. Finally someone asked whether we had been sufficiently holistic in our explorations, but all present recognised the limitations of time.

The first two concerns were most likely prompted in part by CBT and PCT appearing more similar, based on a simple count of the number of neuroscience elements, than the group had expected. Since in drawing conclusions, we are not simply counting elements, this could be regarded as unimportant. The concerns would be more serious had the conclusions of the project been tending towards a higher degree of mechanistic commonality between CBT and PCT; however the conclusions tended towards there being areas of distinctiveness.

During and after the workshop, discussions with the “observer” identified no biases or individual concerns about biases, neither with respect to how the workshop was being conducted nor to how the output was being recorded on flip charts.

Issues of validity specific to focus groups have been identified by Albrecht, Johnson and Walther (1993). They are *compliance*, the tendency to deliver what is expected; *identification*, the tendency to give responses similar to someone to whom the participant is personally attracted, and *internalisation*, that is deeply ingrained opinions which are less susceptible to group influence. The presence during the workshop of at least the first two of these was considered unlikely by the observer, but cannot be ruled out. Internalisation could be considered also unlikely since the group comprised professionals well used to providing congruent but respectful contributions, compared to members of focus groups in general.

After the workshop, participants were provided with the following for checking and for comments: 1) The post-workshop processing of the therapist experiences exercise, as described above, 2) a summary of the workshop conclusions (an early version of

that which appears above), and 3) a transcript of the flip charts (although inspection of these was not specifically requested).

Compliance with the post-workshop review was acceptable, with 75% of the participants, including the neuroscience expert, responding. From these respondents, there were only minor comments on clarity; overall, respondents felt that the post-workshop work to distil the output, extract messages from the therapist experiences exercise and draw workshop conclusions was fair and reasonable. One respondent identified a process weakness, namely that the inclusion of a point on the flip chart does not imply unanimity in the group. It is worth stating therefore that the absence of challenge does not indicate assent; however it was my personal recollection that important points germane to the workshop's objective were challenged and debated.

Final personal conclusions and feedback

When members were asked to report their personal conclusions from the workshop, three participants used the space to say how they appreciated understanding more about the neuroscience of their profession (there was general agreement on this point). One participant was intrigued by where neuropsychotherapy might be heading: is there a possibility of pre-therapy assessment by brain scan or other technique in order to choose the right therapy? While this may not have been a serious suggestion, it exemplifies the immediate post-workshop enthusiasm for the convergence of neuroscience and psychotherapy. One participant reported subsequently by email, "I can't tell you how much I enjoyed the workshop."

Overall the feedback suggested that participants were fully engaged and took seriously the task that was set for them.

CHAPTER FIVE

PROJECT CONCLUSIONS

Introduction

From the workshop we can make two, superficially contradictory, observations, namely that i) the analysis of therapist experiences suggests that different healing processes are at work in PCT and CBT, whereas ii) the matching exercise suggests that most of the processes identified are similar, but with key differences in emphasis. We now move from these *workshop* conclusions to *project* conclusions. Here I will integrate the workshop conclusions with observations and views from the literature and address the question at the core of this project, namely are the main healing processes the same or different? At this stage the conclusions will inevitably be influenced by my personal experiences as a counsellor; however I will seek to identify these when they occur.

Addressing the initial hypotheses of the project

At the start of the project we considered two basic hypotheses, which together with the *common factors* hypothesis, explain the therapeutic equivalency of CBT and PCT:

Hypothesis 1: That PCT and CBT act at different neuropsychological processes and that the modulation of only one process is necessary to alleviate the psychological distress.

Hypothesis 2: That, despite the apparent differences between PCT and CBT, *when examined with a common language and paradigm*, they are both acting via the same mechanism(s).

In the light of the results from the workshop, it seems now appropriate to examine these hypotheses more closely. At one level there is support for hypotheses 2, since

there is broad agreement that healing in psychotherapy is about neuroplasticity and the achievement of a more integrated brain. It could also be said to be about learning and re-evaluation. However such arguments point more to the endpoint of therapy (integration) and the very general mechanisms (neuroplasticity and learning) that operate, rather than to the more specific healing activities that take place. This is in effect a “low resolution” picture, which is not enlightening.

Alternatively, one could argue that there is support for hypothesis 1 in that CBT and PCT involve the therapist and client *doing* very different things to achieve healing and that therefore, by the axioms of neuropsychotherapy, there must be distinct neural processes at work which correlate with what is *done* in therapy. The problem here is that the resolution is too high, i.e. it is too focussed on the detail to relate to the fundamental processes at work. There is also the problem that, to date at least, there is little by way of neuroscientific data at this level of analysis.

Key differences between CBT and PCT

So far then, both arguments are essentially uninteresting. To achieve some learning that is interesting and relevant, we must look to the middle ground which comprises a small number of elements which embody the strategy (or *implicit* strategy) of each therapy. With a neuroscience perspective, and using the outcome of the workshop combined with literature observations, I suggest the picture looks broadly as follows.

CBT is strongly activity focussed, activating the left cortex with therapist-led, collaborative activities which structure and analyse the client’s world (Wills 2008, Cozolino, 2010). Through discussion and experimentation, the self-perpetuating cycle of thoughts, feelings, behaviours and symptoms are broken, involving correction of faulty thinking and the bringing about of a set of more helpful behaviours. From the start there is opportunity for a more active and engaged left cortex to balance the natural negative effect of the right brain, leading to a more positive outlook and more positive feelings (Cozolino, 2010); in the cortical-limbic dimension CBT has been described as a “top-down” process (Linden, 2008).

In PCT the therapeutic relationship assumes greater importance with deeper levels of empathy enabling the client to access the implicit system, bringing into awareness

non-verbally encoded memories and feelings from the right cortex and the limbic system. Vertical and horizontal integration seem to be an implied strategic goal, supported by Lux's synthesis of PCT and neuroscience (Lux, 2010). Being client-led, the therapy is also able to address here-and-now issues for the client when needed but there is no structured, pro-active programme to directly address unhelpful thinking or behaviours.

A proposal as to how different approaches achieve healing

Given the diversity of clients, therapists and presenting conditions, it is perhaps dangerous to generalise, but it seems that both therapies start off down different tracks with different neural processes in play. Once the therapeutic relationship is established, CBT leads with left cortex, conscious, environment-focussed activities which break unhelpful patterns and bring about control, a sense of reward and a more optimistic outlook. In contrast, PCT leads with empathy and congruence which facilitates vertical and horizontal integration in the client, bringing hitherto inaccessible thoughts and feelings into play. So far, PCT and CBT clients have achieved rather different things in therapy. Subsequently, CBT clients are in a better position to do the deeper work that leads to integration and a more solid sense of self. Since this is not either an overt or implicit strategic goal in CBT, one imagines that, to the extent to which this takes place, it happens by natural non-therapist led processes in between sessions. Similarly, PCT clients have further work to do: to experiment with new thinking and new behaviours to enable them to function better in their world. This is not a structured part of PCT. It tends to be a part of the final phase of therapy (Mearns and Thorne, 1999) but in my experience how much of this takes place depends on the therapy time available and what happens to be taking place in the client's life.

If one assumes that psychological healing predates the arrival of the psychotherapy profession, one has to assume that clients are able to heal themselves to some extent. I suggest here that CBT and PCT send clients off down neurologically rather different paths but that, in time, clients are on their own able to fill in the missing bits to become more integrated, better-functioning people. This "filling in" may involve the therapist, but it does not have to be a central activity in the sessions. This point would justify further investigation, but for now it is noted that Budd and Hughes

(2009) have pointed out that the client's cognitions can change as a result of environmental exposure to the outside world, i.e. without the need to target them in therapy. Also Bohart and Tallman (2009) have argued powerfully for the self-healing potential of clients, independent of therapist activity, arguing that it is the "neglected common factor" in psychotherapy (p. 83).

To return to the hypotheses then, the above proposal is not consistent with the pure forms of either hypothesis I or II. It suggests a third "hybrid" hypothesis along the lines of:

Hypothesis 3. CBT and PCT are equally effective because similar neural processes occur but that, in general, a) they may not take place in the same order, b) the neural processes *catalysed by the therapist* are often different, and c) clients may do, with no (or minimal) assistance, whatever other healing work is required which is not enabled by the therapist.

For the avoidance of doubt, all the hypotheses discussed here sit alongside the common factors and refer only to the specific factors.

Are the end-points of therapy the same?

So far we have assumed that a CBT-healed brain is the same as a PCT-healed brain. It should be noted that there is relatively little published work to support or refute this assumption. A symptom-dominated client assessment of therapy may yield different results from an in-depth multi-parameter assessment one year after therapy. Both PCT and CBT emphasise different ways of achieving post-therapy psychological health; CBT by providing tools and education to enable clients to continue the work as necessary in the absence of the therapist (Wills, 2008), and PCT by enabling a more robust sense of self on the road to Rogers' concept of the "fully functioning person" (Rogers, 1961). One might therefore imagine that, thus being equipped differently, there may be differences in the type of healing achieved by the two methods. Indeed, the secondary outcome measures of the equivalence study of Ward et al (2000) would support this idea: this study found that, 12 months after therapy, CBT clients had a better score on the social adjustment scale than PCT clients, whereas PCT clients had a higher overall satisfaction score. It may

therefore be concluded that although a more integrated brain is an implied goal of psychotherapy, the extent and type of integration may differ from therapy to therapy.

Osatuke and colleagues (Osatuke, Glick, Stiles, Greenberg, Shapiro Barkham, 2005) have presented an interesting qualitative study comparing single CBT and PCT cases. Following the course of the two therapies using an “Assimilation of Problematic Experiences Scale”, they found both that the course of the therapies were different and that the outcomes were markedly different. They noted that the outcomes were related to the therapists’ “voice”, with the PCT client “internalising Rogerian conditions conveyed to her” by her therapist, whereas the CBT client learnt her therapist’s “pragmatic, managerial approach to psychological dilemmas”. The differences suggested that there was “more than one way to being psychologically healthy” (p. 108).

We are therefore reminded that the “equivalence” only really applies to *symptoms*, as assessed by CORE-OM for the studies of Stiles et al. (2006, 2008) or the Beck depression scale for the study of Ward et al. (2000). This point has been argued by Norcross (1995) who quotes Yalom (1987): "Keep in mind that this research refers primarily to symptom relief, that is, to feeling and functioning better. It does not mean that patients obtain the same personal education in each of the therapies. Every therapist knows that is not the case" (p. ix).

Overall it is a tentative conclusion of this project, based upon workshop output and literature considerations, that the healed brain of clients helped by CBT differs from the healed brain of those helped by PCT.

Towards an integration

If hypothesis 3 is correct, it provides a compelling basis for integrating the two modalities. Why leave the self-healing parts to chance? Why not tailor interventions to complement the aspects of healing that clients can do on their own? I suspect that many integrative therapists do this anyway, but it would at least be interesting to explore this.

Further integrative opportunities to tailor treatment to the abilities of the client emerge from taking a neuroscience perspective. An example of this is provided by Cozolino (2010) who argues that “disorders of affect need activation of cortical executive structures” noting that “while emotional attunement with ... feelings is helpful, it has been my experience that after the working relationship has been established, challenging thoughts and encouraging new behaviours can often be more beneficial to the therapeutic process than empathy alone” (p. 41). He notes that this route is less emotionally painful for the client (and the therapist). Perhaps clients scared of “going deep” can be better helped in this way.

Implications of a neuroscience perspective

The above conclusions suggest that a neuroscientific perspective on psychotherapy could lead to a more solid rationale for integrative therapy and for selecting the best approaches or interventions for any particular client situation. There seems less need for the therapist to align themselves to any of the therapeutic doctrines, all of which evolved with little input from neuroscience.

As was suggested in the introduction, the scientific perspective has the potential for unification of the psychotherapy field. To post-modernists, the assumption in science that there is one single knowable truth is arrogant and unpalatable. And yet science is humble, and its practitioners would recognise that it will take many decades before the science of psychotherapy would develop a confidence to underpin therapy in a comprehensive way. In the meantime, as is suggested by this study, neuroscience could have a role in stimulating debate, generating testable hypotheses and suggesting improvements to therapy. It could do so while maintaining respect for the theory and practice of other therapeutic traditions.

One key conclusion of this project is that psychotherapists with no science background are able to engage with neuroscience in a productive way and secure useful learning and insights. It also seems that the workshop format, with expert input, is a productive way of doing this. The hunger noted for this scientific underpinning suggests that neuroscience could usefully feature in the training of psychotherapists, as has been proposed for psychodynamic therapy (Divino & Moore, 2010).

Validation and limitations of this study

There are a number of issues which limit the validity of this project. The first is generalisability (Fern, 2001), given that the number of participants was rather small. With respect to the matching exercise, it could be argued that the assignments that emerged were rather consistent with the theoretical underpinning of the two modalities, suggesting that a different sample of therapists would be likely to come to similar conclusions. This is not to devalue the contribution that was made, but to suggest that the theory does offer an element of triangulation.

The second is that the project involved taking therapists with, in general, no previous knowledge of neuroscience and, after the briefest of “crash courses,” expecting them to make neuroscientific judgements; this was also carried out in an environment which was, for the most part, deliberately non-critical. The presence of a neuroscientist expert mitigates this concern to some extent, but arguably not fully.

Thirdly, the range of neuroscience observations considered did not include many that were directly very informative about healing mechanisms. A key issue here is one of causality. An association of brain activity in a particular area with a therapeutic outcome such as the alleviation of depression does not imply causality. However it can be suggestive of mechanisms.

As a result of these limitations one needs to be careful about what is the essence of the conclusions drawn in this study. It is not unreasonable for a group of CBT therapists and PCT therapists to draw conclusions as to whether they think the essential healing mechanisms of their approaches are the same or different. In this case we have done so in an environment which makes the participants more aware of the kind of things that go on inside the brain, observations which other writers have considered to be relevant to neuropsychotherapy.

The outcome of this study is not therefore a neuroscientific outcome. It is a *qualitative* and *inductive* outcome based on the subjective views of a group of therapists who are looking at the topic, with a joint neuroscience and experiential perspective. The value then of this kind of study is in *suggesting* and *enlightening* rather than proving and informing.

Reflexivity

As disclosed earlier, I am an integrative counsellor with a humanistic, person-centred base; but I also have a scientific perspective and am keen to use this perspective to enlighten my profession and to move towards greater unity in the psychotherapy field. Therefore I started with respect for both the humanistic and scientific traditions. I approached this study with an open mind, wanting to be enlightened. My starting points were hypotheses 1 and 2, but I was not wedded to these.

What emerged from the project, hypothesis 3, was not envisaged by me, nor do I believe it was encouraged me. Taking the role of facilitator could have led to biases, but I was not aware of anything at the time and those involved did not identify any biases. During the project, as in this dissertation, I make a clear distinction between *workshop* results and conclusions, in which my role was essentially that of organisator and facilitator, and *project* conclusions in which the literature and my personal experience have made a contribution.

I have found much to stimulate and inspire, and much to mull over. I am already incorporating neuroscience into my counselling practice. For example, it provides me with a structure onto which I can build an understanding of the client. I also find it helpful in normalising a client's experience. As Cozolino put it: "...adding a neuroscience perspective to our clinical thinking allows us to talk with clients about the shortcomings of *our* brains instead of the problems with *theirs*. The truth appears to be that many human struggles, from phobias to obesity, are consequences of brain evolution and not deficiencies of character" (2010, p. 356, emphasis added).

Further work

This study is indicative in nature and it would be desirable to confirm the findings with a larger group of therapists. As noted above, the therapists' lack of familiarity with the neuroscience was a weakness of the present study, as was the lack of time for more in-depth enquiry; both of these could be addressed in a further study. It could also be useful to consider client perspectives on healing.

The restricted timescale of the workshop meant that the full range of the introductory material provided to the group could not be considered. For example, Bentall's scheme for depression (Appendix 5) raises the possibility that PCT is more focussed on dealing with the pre-disposition to depression whereas CBT is more focussed on dealing with the consequences in the here-and-now. It would be desirable to investigate these and other possibilities.

A further extension of the present work could explore with a group of therapists the possibility of developing a neuroscience-based rationale for the integration of CBT and PCT (and optionally other modalities). This could include exploration of the "horses for courses" issue, which was left largely unexplored in the present study.

A real step forward in our understanding would be side-by-side brain imaging studies of clients undergoing PCT or CBT therapy. It is regrettable that the imaging community have so far only considered CBT to be worthy of investigation. A positive outcome of the present study would be the inspiration to look at PCT also, especially in view of the suspicion that the outcome of therapy is rather different, as discussed above. Post-therapy imaging could be coupled with psychological assessments of clients taken immediately after therapy and at, say, 6 and 12 months after cessation; this could help us understand the longevity of the healing effect and whether there are neurobiological correlates for different levels and types of post-therapy psychological health.

Finally, if CBT does indeed result in a different healed brain with, as Osatuke et al. (2005) put it, a "pragmatic, managerial approach" to psychological issues (p.108), then there are interesting socio-political consequences of investing heavily in CBT, as is currently the case in the UK. The phrase "social engineering" springs to mind, even if this is inadvertent rather than deliberate. This would be an interesting line of research enquiry.

Summary project conclusions

This project sought to unravel the "equivalence paradox". The conclusions of this project suggest that, firstly, there need be no sense of "paradox"; a neuroscientific

perspective would indicate that there are reasonable mechanistic reasons why CBT and PCT both work. In particular, it proposes a hypothesis:

CBT and PCT are equally effective because similar neural processes occur but that, in general, a) they may not take place in the same order, b) the neural processes *catalysed by the therapist* are often different, and c) clients may do, with no (or minimal) assistance, whatever other healing work is required which is not enabled by the therapist.

Secondly, it has also thrown into question whether “equivalence” in terms of symptom reduction alone is very meaningful and raised the possibility that CBT and PCT give rise to different healing end-points.

Thirdly, it has shown that interactively incorporating a neuroscience perspective into practitioner deliberations on psychotherapy can be stimulating and enlightening, giving new insights, ideas and suggestions for further work.

Overall, it seems we are really just in the foothills in terms of understanding what goes on in therapy. As we climb to new vantage points, perhaps we will see, through neuroscience lenses, what are the optimum ways in which two human minds can engage to enable psychological healing.

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Wilkinson, M. (2010). *Changing minds in psychotherapy*. London: Norton.

Wills, F. (2008). *Skills in cognitive behaviour counselling and psychotherapy*. London: Sage.

APPENDIX 1. Literature Searches

Database: PsycINFO, PsycARTICLES, PsycBOOKS, Psychology and Behavioural Sciences Collection.

Search String <i>(titles and abstracts except where indicated)</i>	No. hits	Comments
(neuroscien* OR neuroimag* OR neurobiol*) AND (counsel* OR pschotherap*) (2010-2011)	204	many relevant, good source of reviews and books
As above but title only for neuro terms (2000-2009)	252	some relevant in later years
(neuroscien* OR neuroimag* OR neurobiol*) AND (person cent#red OR person-cent#red)	13	1 relevant
Dodo OR equivalence paradox	55	many relevant
(neuroscien* OR neurobiol* OR neuroimag*) AND (dodo OR equivalence paradox)	12	no relevant publications
(neuroscien* AND psychotherap*) AND (workshop OR focus group)	3	no relevant publications

APPENDIX 2. Glossary of Brain Terms

Brain Element	Normal function	Relevance to Psychotherapy
Amygdala	Part of the limbic system, an almond-shaped region which is the central hub for fear processing. It appraises situations for danger, safety and familiarity. It is the site for emotion-based learning – it attaches an emotional value to what is sensed in the environment.	Traumatic experiences are held in raw form here before being processed (or not in PTSD) by the hippocampus. The amygdala is chronically activated in depression (on red alert). Affected by security of attachment.
Cerebellar vermis	Worm-like structure within the cerebellum, with a role in maintaining balance.	Unknown, but may be involved with feelings of “being off-balance”.
Corpus Callosum	Bundle of long neural fibres which accounts for most of the communication between left and right hemispheres.	Enables integration of cognitive and emotional worlds. Size reduced in some trauma and reduced activity in depression.
Global Workspace Theory	A concept roughly coinciding with that of “working memory”. A stream of subjective experiences involving conscious and unconscious components.	Possible means of deconstructing and reconstructing a client’s world-view.
Hippocampus	Part of the limbic system, a seahorse-shaped structure responsible for creation and organisation of long term memory.	Activity reduced in depression and in unresolved trauma.
Limbic system	The “paleomammalian” brain comprising amygdala, thalamus	Safety is a prime concern of the limbic

	and hippocampus, septum and some lower parts of the cortex. The dominant part of the brain in neonates.	system. Will dominate the cortical brain when short or long term danger is perceived.
Serotonin	Mediates arousal, sleep patterns, mood and emotion.	Levels elevated with SSRI antidepressants.
Subgenual Cingulate Cortex (SCC)	Part of the cortex that is situated under the corpus callosum. Often associated with sadness, it is strongly link to the hypothalamus, the brain stem, the amygdala, the insula and the hippocampus.	The volume of this region is reduced but is also hyperactive in depression. It has been associated with guilt. Also links into parts of the frontal cortex associated with self-esteem.
Thalamus	Part of the limbic system sited on top of the brain stem. Relays and processes incoming sensory information. Regulates sleep and wakefulness.	Implicated in sleep disturbances associated with depression.
Vagal system	Central component of the central nervous system facilitating arousal, high energy and flight-flight response.	Higher activity correlates with positive social engagement and more secure attachment.

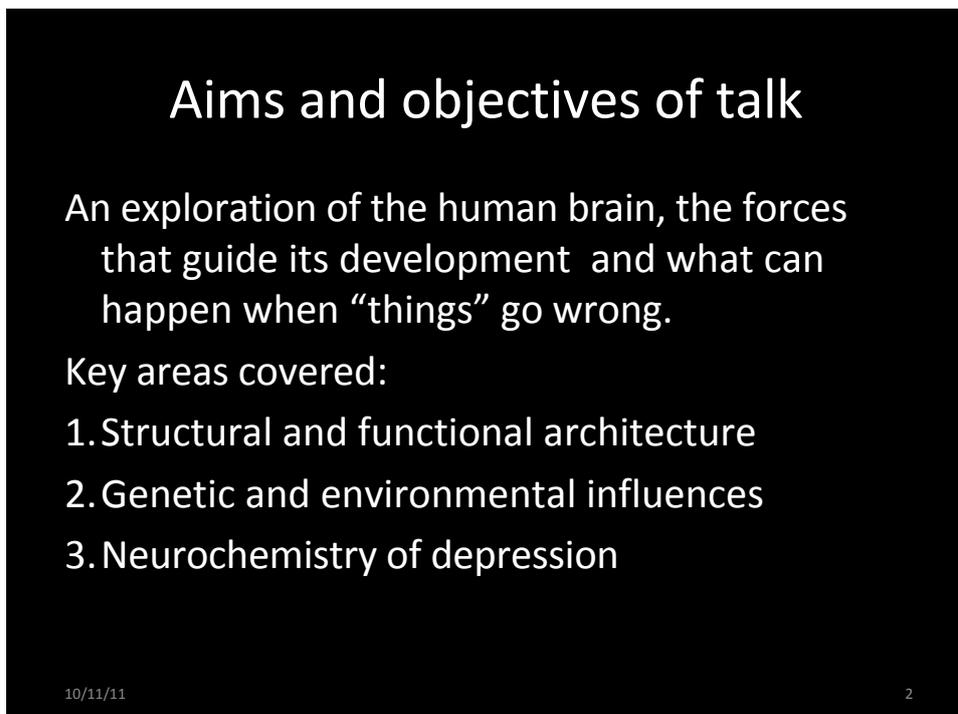
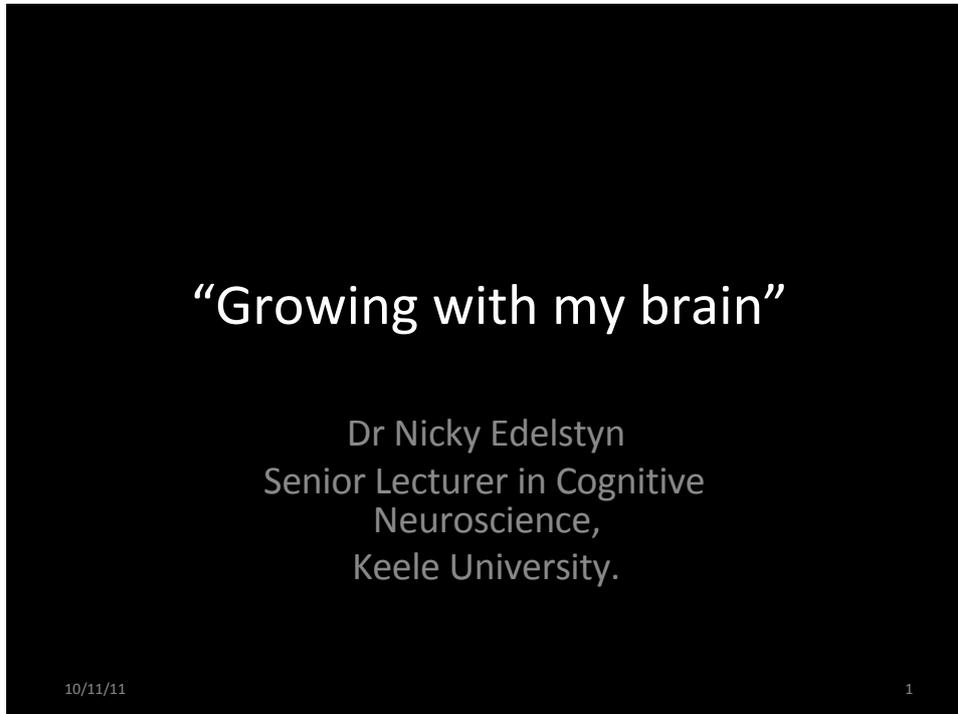
APPENDIX 3. Key features of the implicit and explicit memory systems. From Cozolino, 2010, p. 78.

<i>Implicit</i>	<i>Explicit</i>
early developing	late developing
highly functional at birth	matures later with hippocampus and cortex
subcortical / amygdala bias	cortical / hippocampal bias
nondeclarative	declarative
emotional	organised by language
visceral / sensory-motor	visual images
context free	organised within episodes and narratives
procedural learning	conscious organisation of experience
behaviour patterns and manual	construction of narrative self

APPENDIX 4. Presentation by Dr. Nicola Edelstyn

The presentation also included video clips which may be accessed at <http://www.youtube.com/watch?v=mMDPP-Wy3sl&feature=related> (brain development) and <http://www.youtube.com/watch?v=HVGIfcP3ATI> (brain structure and function).

Some slides have been omitted for copyright reasons



structure and function

Key points:

- ¥ Structure of the brain is not homogeneous
- ¥ Functional localisation
- ¥ Brain can be divided into older and newer divisions
- ¥ Cerebral hemispheres seat of sensation, perception, cognitions (e.g. Memory, Decision-making).

10/11/11

3

structure and function

- ¥ No area dedicated to “me”
- ¥ “Me” is the product of activity in many different brain areas.
- ¥ Relative activity in different areas will lead to fluctuations in how we feel.

10/11/11

4

brain development

Key points:

- ¥ Genes guide brain development
- ¥ Environmental factors “fine tune” connections
 - Ǿ Rich environments have a physical correlate in the brain...more connections between brain cells
 - Ǿ Extend to other forms of experience.....more subtle effects on connections, represent predisposition to particular thinking styles (?)
- ¥ Ontogeny recapitulates phylogeny
 - Ǿ Older brain “subconsciously” influence behaviour

10/11/11

7

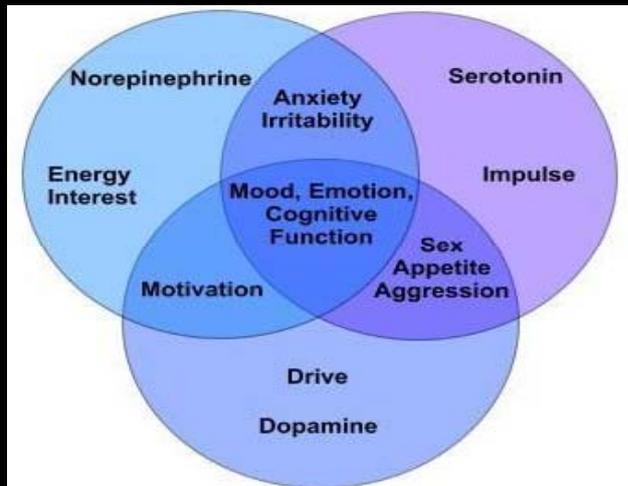
neurochemistry of depression

BEHAVIOUR	THOUGHTS
Stopped going out Not getting things done at work Loss of appetite or binge eating Withdrawn from family and friends Relying on alcohol and sedatives Stopped doing things they enjoyed Unable to concentrate	“I’m a failure” “It’s my fault” “Nothing good ever happens to me” “I’m worthless” “Life is not worth living”
FEELINGS	PHYSICAL
Overwhelmed Guilty Irritable Frustrated Unhappy Indecisive Disappointed Miserable Sad/tearful	Tired all the time Sick and run down Headaches and muscle pains Churning gut Sleep disturbance Poor appetite/weight loss

10/11/11

15

neurochemistry of depression



10/11/11

16

Final comments

∞ Key points:

- ∞ Mental process and behaviour influenced both by genes and early environmental influences.
- ∞ Predispositions towards psychopathology in later life can be genetic, environmental or combination of the two.

10/11/11

20

APPENDIX 5. Bentall's scheme for the development and maintenance of depression

Image removed for copyright reasons

Reproduced from Bentall, 2004, p. 269.

APPENDIX 6. Therapist Briefing Document and Research Participation Agreement

UNIVERSITY OF CHESTER

MA RESEARCH PROJECT: "HEALING MECHANISMS"

INFORMATION FOR THERAPIST PARTICIPANTS

1. Background to the Research

Research shows that cognitive behavioural therapy (CBT) and the person centred approach (PCT) are both effective for common primary care presentations such as anxiety and depression. This finding has been termed the "equivalence paradox" (although the basis for why it is called a paradox is not entirely clear). Some have concluded that this is because there are certain common factors that responsible for this finding: these include the therapeutic relationship, a sense of expectancy and hope, and the creation of a time to focus. Less attention has been paid to whether there are explanations for the equivalence that are based on the mechanisms of healing described in psychological or neuroscientific terms. Two immediate possibilities suggest themselves: either the fundamental processes at work are the same, or that they are different but achieve an equivalent healing end point for the client.

Modern neurobiological techniques, particularly imaging, are providing us with some insights into the processes that may be at work. I am interested in making connections between this research and the observations and views of experienced therapists. While the focus will be on CBT and PCT, I aim to enrich the discussion with viewpoints from therapists who integrate these and other approaches.

Such work requires us to work across paradigms and with different language sets. This could be challenging but also rewarding; arguably the whole field is ripe for some unification between the neuroscientific, the psychological and the humanistic/phenomenological perspectives.

2. Objectives of the Workshop

The objectives of the workshop are firstly to collect together the views and experiences of person-centred, CBT and integrated therapists and relate them to emerging findings from neuroscience research in order to derive our own insights into the mechanism of healing. Secondly, the insights will be used to examine whether there are mechanism-based reasons for the equivalence paradox (in addition to the common factors explanation).

3. Requirements for therapist participants

1. At least 500 hours of client contact time
2. Substantial experience of either:
 - a) "pure" person centred therapy (PCT), OR
 - b) "pure" cognitive behavioural therapy (CBT), OR
 - c) some form of integrated approach which combines elements of PCT or CBT (and optionally other approaches)

3. You should have an interest in the mechanism of psychological healing
4. You should be comfortable with contributing in a focus group style workshop environment
5. You should be respectful of other disciplines and those with other perspectives on the healing process

4. What is Required of Research Participants

Before the Workshop

1. To do some reflective preparation to enable you to contribute to the workshop your understanding of, and observations on, what happens when your clients are healed in therapy.
2. To read some background reading material that will be provided. This will include a summary of the existing research on the mechanism of healing, focussing on the neuroscience perspective, and may include one or two papers which those unfamiliar with the field might find helpful. There is no need to "learn" this material; it is intended merely to provide a certain amount of orientation.

The Workshop

3. To attend and participate in a 4.5 hour focus group style workshop to be held on Saturday September 3rd 2011. You will be expected to share your experiences and understanding of client healing processes (as discussed above) and to participate in the workshop discussion.

After the Workshop

4. You will be asked to review a written summary of the findings of the workshop and provide comments relating to accuracy and further thinking or any other type of comment.

It is hoped that the findings of the workshop may lead to a publication. There are no formal requirements or expectations regarding how the preparation and submission of any manuscript is progressed. Such activities fall outside the scope of the project itself and are a matter to be agreed among those who wish to take part in publication.

5. What participants will gain from the workshop

For participants with an interest in the neuroscience of healing, the workshop should be stimulating, informative and enjoyable. In addition it is hoped that participants will gain insights and ideas that will help them in their own work with clients. There will also of course be networking opportunities during the lunch or after the workshop.

6. Terms of Participation

The following terms are designed to protect people.

1. Participants should take precautions to avoid disclosing confidential client material when contributing their experiences. It is recommended that a) names, where used, should be changed and b) any details which might lead to identification of the client be changed to something of equivalent impact. Participants agree to be responsible for any consequences of client material disclosure that might occur and to indemnify the University of Chester of any such consequences.
2. Participants agree to look after themselves if they find that any of the material discussed is disturbing or emotionally challenging for them. This may include removing themselves from the room or other ways of attending to their needs. A list of counsellors will be available at the workshop for those who feel they need help.
3. All participants have the right to withdraw from the project at any time.
4. All participants have the right to participate on an anonymous basis, offering only their given names at the workshop.
5. If participants agree, their full names and email addresses can be shared with the other participants.
6. Participants agree that the material generated by the project may be written up and published as an MA dissertation. Therapist participants will not be identified in this dissertation.
7. All insights, ideas, findings and publishable material generated by the project will be formally regarded as the intellectual property of the University of Chester. However, the participants agree to observe normal academic practices regarding publication of any new insights, ideas and findings. Those who wish to be involved in publication may do so provided they played an active part in the generation of the material and the writing of the paper.
8. Participants agree that the entire workshop may be audio recorded for the sole purpose of improving the accuracy and reliability of the analysis of the material generated by the workshop. The prime method of capturing workshop material will be in writing (flip charts etc.). The tape / audio file will be kept in a secure environment for three years and then destroyed. It will not be used for any other purpose without the written permission of all participants.

Reply Form

About You

Name:

Address:

Email:

Telephone:

Mobile:

Theoretical Orientation Experience (see 3.2 above). Tick all that apply:

a) pure PCT

b) pure CBT

c) integrated incorporating elements of PCT or CBT

Total client contact hours to date:

In what settings do you work:

Other information about your therapy that may be relevant:

Workshop arrangements

The workshop will take place at a venue in Chester from 10 am to 2.30 pm. Lunch will be provided. Please indicate below if you have any dietary requirements.

Declaration

I have read the information provided on the project and am content that I understand what is involved and that I am in agreement with the terms of participation.

I agree / do not agree to my name and email address being shared with other participants.

Signed

Date

Please return to A.J. Garman, 15 Peel Hall Lane, Ashton Hayes, Chester, CH3 8DE. Thank you.

APPENDIX 7. Flyer Used to Recruit Participants

University of Chester: Call for Research Participants

Have you ever wondered what is happening when clients heal?



Research shows that cognitive behavioural therapy and the person centred approach are both effective for common primary care presentations such as anxiety and depression. But what are the **fundamental healing processes** at work? Are they the same, or do they act at different points?

Modern neurobiological techniques, such as imaging, are providing us with some insights into the processes that may be at work. We are interested in making connections between this research and the **observations and views of experienced therapists**. We intend to pursue these questions by means of a focus group workshop for which we are looking for participants. Participants will:

- hear a summary of the latest relevant neuroscience research
- share their own perceptions of the healing process based on their own practice
- take part in interactive discussion to arrive at plausible mechanisms of healing

We are looking for experienced:

- cognitive behavioural therapists (CBT)
- person-centred therapists (PCT)
- integrative therapists combining CBT and PCT

Informing the process will be one or more **neuroscience experts**.

Participants should have **an interest in healing mechanisms** and a willingness to work across different paradigms.

The workshop will be held at the University of Chester on Saturday 3rd September 2011, from 10am to 2.30pm. Lunch will be provided.

The project has been approved by the Ethics Committee of the University of Chester.

The workshop should be informative, insightful and enjoyable.

If you would like to know more, please contact Andrew Garman at andrew@garman.bacp.co.uk

APPENDIX 8. Programme for the Workshop

HEALING MECHANISMS WORKSHOP

Saturday 3rd September, Chester University, Room 116, Best Building

10.00	Introductions, Aims of the Workshop, Plan for the Workshop.
10.15	Presentation by Dr. Nicky Edelstyn: “Growing with Your Brain”
10.45	Coffee / tea
11.00	Time for discussion on the neuroscience input
11.30	Sharing personal therapist experiences and views on key healing events (based on pre-work)
12.15	Distillation of experiences and moving towards identifying linkages
1.00	Lunch
1.30	Further processing of workshop material.
2.00	Synthesis of Findings. Hypothesis generation. Personal conclusions.
2.30	Workshop Close

APPENDIX 9. Attributes of the Therapist Participants

Code	Gender	Lead orientation	Other orientation⁴	Setting	Client contact hours
A	female	PCT	CBT	NHS GP practice, private	>>500
B	female	PCT		NHS primary care psychological therapies service	750
C	female	PCT	Integrated CBT/PCT	NHS GP practice	1,500
D	female	CBT	PCT	NHS primary care psychological therapies service	>5,000
E	female	CBT	PCT, EMDR	NHS primary care psychological therapies service	>3,600
F	female	CBT		NHS primary mental health service, private	>3,200
G	male	Integrative, CBT+PCT		college counselling, voluntary, private	1,100
H ⁵	female	Integrative		youth service, prisons, voluntary, private	600

⁴ Secondary or historical orientation

⁵ This therapist was absent from the workshop due to illness and declined to otherwise contribute

APPENDIX 10. Biography of Dr. Nicola Edelstyn

Nicky Edelstyn is a Senior Lecturer in Cognitive Neuroscience at the University of Keele where she is the Director of Learning and Teaching, with oversight of the programmes offered to undergraduates and masters students. Her teaching areas include cognitive neuropsychology, the structure and function of the brain, and abnormal psychology. Nicky has published over research 50 papers on these topics and has contributed case material and chapters to the undergraduate core text *Abnormal Psychology* by Kring et al.

Nicky was previously a Research Fellow at the MRC Neuropsychology Unit in Oxford and she has also undertaken research in the School of Psychology and Department of Psychiatry at Birmingham University. Her general research field is cognitive neuropsychology, and includes the study of mental processes and brain activity in various types of delusion. Examples include the Capgras delusion, where an individual believes a significant other has been replaced by a visually similar imposter who harbours evil intentions towards them, and Cotard's delusion, where the individual believes body parts are missing or, in extreme presentations, they are dead. Other related phenomenology of interest include feelings of disconnection from the body, "depersonalisation", and from the world "derealisation". The second strand to Nicky's research focuses on the impact Parkinson's disease, the disease itself as well as the medication prescribed to control the motor symptoms, have on mental processes, particularly memory.

Nicky's research and teaching has provided her with a broad understanding of brain mechanisms and how their relationship to mental processes in both healthy individuals and in cases where these breakdown. She is well placed to help understanding and interpretation of a wide range of psychotherapeutic observations and experiences.

For more details, please see www.keele.ac.uk/psychology/people/edelstynnicola/

APPENDIX 11. Preparation Guide for Therapist Experiences Exercise.

Contributing Observations and Views on Healing: A Guide to Preparing your Input to the Workshop

You are asked to contribute your views and observations to the workshop on how clients are healed, *using whatever language is meaningful to you*. There is no need to bend your language to the workshop theme – if you wish to use imagery or non-neurobiological language or non-psychological concepts, then that is fine.

There are other ways of preparing your input and there is no obligation to follow these guidelines.

The following should take no more than 15 minutes:

1. Write down a list of 5-10 clients you have worked with. If you are contributing on a “pure” approach – CBT or PCT – they should have been counselled with this approach. The focus is on depression or trauma (or both).
2. For each, reflect on the work you did and write down your understanding of the key event or events that made the difference in therapy. Underline key words. For example:

For Sharon, the key thing was realising deep down that she was not to blame. She had re-evaluated her past and found a sense of who she really was; and that she was not abnormal.

Peter came to a more realistic view of his social environment and understand how he could change his thoughts and behaviours so as to break out of the viscious cycle he was in.

3. Review the words that you have underlined. Then write down some summary statements. If you wish, these could allude to common underlying mechanisms or processes you think were at work. At the workshop you will have about three minutes to make your contribution. This should be time enough for a few short statements, perhaps illustrated with an example (without identifying the client of course) and perhaps a little discussion.

At the workshop your contribution will be captured on a flip chart or similar. There is no need to contribute anything in writing, so scraps of paper are fine!

Please complete this preparation before reading the background material, so that what you contribute is less biased by theories or views of others.

Healing Mechanisms Workshop

Welcome!

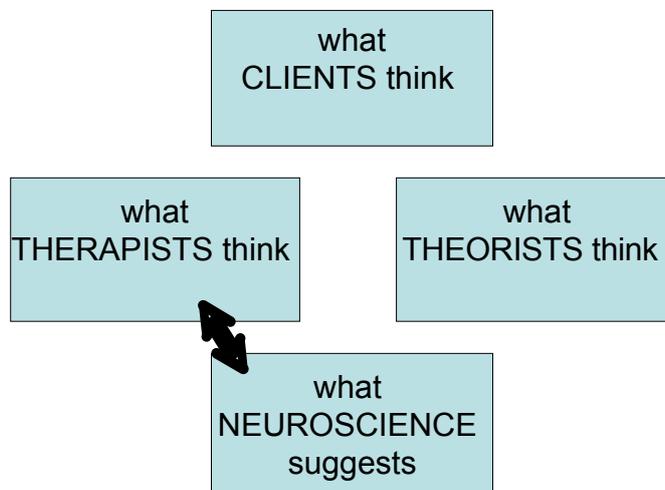
Aims of this workshop

- ¥ To compare our experiences of therapy with certain observations from neuroscience.
- ¥ To consider whether CBT and PCT work, in part at least, by distinctive mechanisms
- ¥ To improve our understanding of what we do at a neuroscience level
 - Ĝ to satisfy our curiosity
 - Ĝ perhaps find something that will improve our practice.

HEALING MECHANISMS WORKSHOP

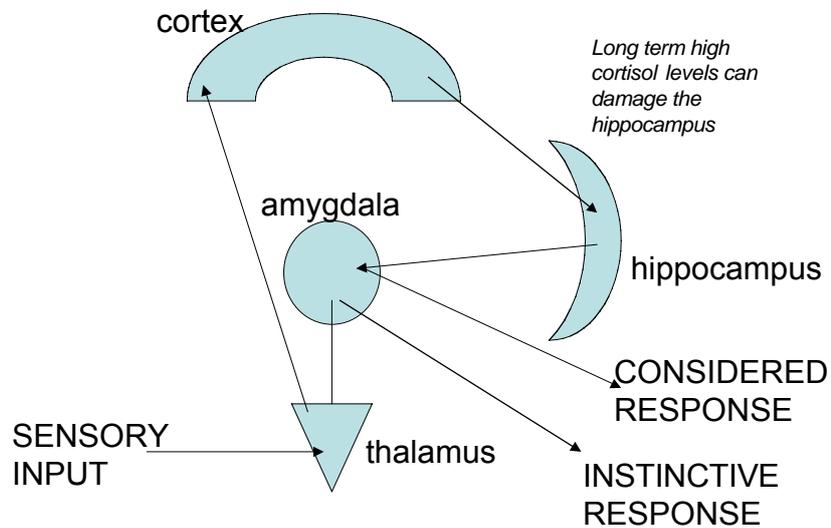
10.00	Introductions, Aims of the Workshop, Plan for the Workshop.
10.15	Presentation by Dr. Nicky Edelstyn: 'Growing with Your Brain'
10.45	Coffee / tea
11.00	Time for discussion on the neuroscience input
11.30	Sharing personal therapist experiences and views on key healing events (based on pre-work)
12.15	Distillation of experiences and moving towards identifying linkages
1.00	Lunch
1.30	Further processing of workshop material.
2.00	Synthesis of Findings. Hypothesis generation. Personal conclusions.
2.30	Workshop Close

Perspectives on Healing: what happens in therapy?



1. Mirror neurons enable empathy
2. Mirror neurons activation correlates with theory-of-mind region activation
3. Empathy is perceived by client physiologically
4. Vagal activation -> social engagement system, calmness
5. Oxytocin release, bonding and trust
6. Naming feelings leads to attenuation of emotions
7. Safety, cortisol levels and relaxation
8. PFC activity reduced (in CBT). Decreased ruminations?
9. Increased hippocampal activity (CBT)
10. Increased activity in SCC (in CBT)
11. High activity in SCC / PCC boundary predicts CBT failure
12. Strong left cortex language correlates with CBT success.
13. Stimulation of left cortex balances right left affect
14. Implicit (subconscious) system has strong role in decision making
15. Top-down (cortex & limbic) integration
16. Left-right integration (poss reversal of trauma damage to CC)
17. Promotion of neuroplasticity (SSRI)
18. Reduction in hippocampal activity (SSRI)
19. Like parents, trusted others can help regulate affect
20. General neuroscientific support for the Öatobiographical selfÖ

Fig.1 The amygdala: assessing danger and safety



Does neuroscience matter?

Adding a neuroscientific perspective to our clinical thinking allows us to talk with clients about the shortcomings of *our brains* instead of the *problem with theirs*. The truth appears to be that many human struggles, from phobias to obesity, are consequences of brain evolution and not deficiencies of character. Cozolino, 2010, p. 356, emphasis added.

APPENDIX 13. Transcripts of the Flip Charts from the Workshop

NB numbers used herein refer to neuroscience elements, see Table 1.

THERAPIST EXPERIENCES

PCT -

A: Understanding of self in world, securing compassion to self, acceptance, letting go, adaptation, OK with change, decluttering of feelings, emotions and thoughts. All leading to re-organisation. Empowerment, congruence, hope, control.

B: Increase self-acceptance, not judging the child, realising client is an adult now. Rationalisation of thoughts and feelings. Revaluation of self – self belief. Realised not to blame. Understanding of destructive patterns. Understanding reality better.

C: Linking behavioural patterns with feelings. Acceptance of feelings. Letting go of guilt. Gaining control. Seeing projections of others in client (disentanglement). Realising why client lost sight of self. Understanding coping strategies. Facilitated exploration – asking questions and working out answers. Increasing self-care. Awareness of self and belief in self.

CBT –

D: Behavioural activation leading to pleasure, non-avoidance (engagement), achievement – increases mood. Repeated exposure to painful memories decreases anxiety. “Processing trauma”. In vivo practised. Decrease of fear (e.g. for men). Desensitisation. Relationship important – collaborative. //(new client) Increase in self esteem from challenging negative automatic thoughts. More integrated sense of self. Self learning re maintenance factors. Identifying thinking errors.

E: Formulation of problems wrt past, present and future. Looking at history, e.g. from what maintains current behaviour. Look at precipitating factors. Goals. Look at 5 areas – 1) the environment and 2-5) the behaviour, emotions, thoughts and symptoms. Challenging negative automatic thoughts. Cognitive work to explain behaviour. Basic learning re brain and how it works.

F: Relationship changes everything. Problem solving and analysis. Incremental behavioural changes bring rewards. Taking ownership of self- taking responsibility. Socratic dialogue. Anger strategies. Relaxation. Mindfulness strategies.

INT –

G: Re-evaluation. Recognition of historic patterns. Giving self permission to change. Challenging negative automatic thoughts. Recognising self-worth. Accepting loss. Managing and changing relationships. Realising that one’s position in life is normal (normalising). Empowering. Considering the future and developing motivation.

PROCESS OF IDENTIFYING NS ELEMENTS

CBT chose: 3 4 5 6 7 8 9 12 13 15 16 17 19 20

PCT chose: 1 3 5 6 7 8 14 15 16 19 20

NOT CHOSEN BY EITHER: 2 (later assigned to both but with some difference of emphasis), 10&11 (hard to interpret and dismissed as phrenology by NE), 18 (about SSRIs anyway).

VENN DIAGRAM HAS:

Common: 1 3 5 6 7 8 15 16 19 20

Unique to PCT: 14

Unique to CBT: 4 9 12 13 17

OVERALL SYNTHESIS

Basic common factors re relationship: 4 5 7 19

Arguably also common factor: 1 3 (but accepting that PCT empathy might sometimes be deeper)

Common to both: 2 6 8 9 13 15 16 20 (possible differences of emphasis). Re 8, CBT work breaks maintenance cycle for ruminations and replaces with other cognitive work, PCT similar but delves under the rumination material to gain insight.

Unique to PCT: 14

Unique to CBT: nothing in that 9 and 13 were eventually thought to apply to PCT also. 12 was incidental and 17 was re SSRIs.

POST SYNTHESIS COMMENTS

Neuroplasticity is core. Healing is about neuroplasticity.

Different techniques are aimed at the same goal.

Limitations exist e.g. personality disorders.

Work between sessions:

PCT – this varies and is unstructured. Involves conscious and sub-conscious processing but with emphasis on latter. CBT – may start with re-inforcement of learning. Then client experiments and takes ownership of the process.

Habits are challenged. Structuring the process gives feeling of control.

Giving feedback is associated with feeling of reward.

Rogers' "double learning" from naming the feeling

We are constrained by language, esp PCT group

We can be opportunistic – choosing technique to meet client need in the moment

PERSONAL CONCLUSIONS

G: CBT and PCT probably the same if adjusted for language

D: felt distinctive things are done

A: PCT is more than just the relationship – challenging etc.

G: CBT is the integrative therapy and has assimilated techniques from elsewhere (PCT, mindfulness), hence hard to contrast

E: integration is driven by what clients need at the time

F: CBT is hypothesis driven

B: the relationship is fundamental. Referred to "true" empathy – does PCT give deeper empathy

G: difference – in CBT core conditions are skills, in PCT they are a way of being
F: CBT is holistic
A: one learns and evolves a practice which matches the therapist as a person.
About experience (hard to express).

PERSONAL CONCLUSIONS AND THOUGHTS

Good to understand brain processes x 3
Intrigued by future use of neuroscience – psychological assessment with brain technique?

VALIDATION QUESTION

D: would results have been different if CBT and PCT done separately and in isolation?
A: thought that the close proximity of the workings was valuable in provoking thinking
G: thought that the experiential basis of the input was helpful (roots) and that showed differences
F: CBT conclusions may have been influenced by the counsellor backgrounds of two of the three CBT therapists [F agreed to provide separately a view of what she would have come up with had it been left to F]
?: Sense of holism missing.

PCT GROUP FLIPS

5, 7 – safe therapeutic environment, necessary and sufficient conditions

1. Clint's world, autonomy, empathy, edge of awareness, walking with them in their world, uniqueness
...*linked to*...3, 6, 7: exploration permitted within a safe trusting relationship, self-acceptance, valuing leads to attenuation of emotions + 4. psychological contact.

8 encourage ruminations⁶, reflection, exploration. Encourage the grey area, challenge stuckness.

20 self actualisation

15 sitting with our emotions

16 balance

19 conditions of worth / attachment and US as therapists / endings etc.

14 relational / facilitated depth. Contextual / perspectives.

7 fearful client – decrease levels of fear creates trusting safe environment, relational depth. Pace of client.

CBT GROUP FLIPS

17. Neuroplasticity: learning from experience throughout life (and in therapy!)
 behavioural experiments
 cognitive restructuring

⁶ Taken by this group at the time to mean helpful thinking through rather than unhelpful repeated thinking patterns.

3. Empathy: important in CBT, understand the client, perspective. Not trying to convince them of another way of thinking BUT Socratic dialogue.

5,7. Trust bonding: important in CBT, the collaborative relationship

12. Strong left language cortex: CBT works well with psychologically minded people who can verbalise thoughts and emotions

15. Top-down cortex-limbic integration: e.g. processing in CBT. Traumatic memories are processed (via exposure and cognitive restructuring) and are stored in other brain areas (via hippocampus).

HABITUATION – thoughts and memories are no longer a threat

19 Trusted others regulating affect:

collaboration (collaborative relationship)

language

naming feelings via Socratic dialogue (6. Naming feelings leads to attenuation of emotions)

8. Decreased ruminations:

targeted in behavioural activation

treating rumination as a behaviour

in GAD – decreasing worrying thoughts

Attempt at mapping:

The whole process / cognitive restructuring concerns neuroplasticity

6, naming feelings and 13, LR balance, is about normalisation

1,3,4,5,7 is about the collaborative relationship, including homework

, links to 8 and 16

Prolonged exposure, habituation, reprocessing linked to 8

Behavioural activation, targeting rumination as a behaviour, cognitive work on worry=
GAD

Emphasis on cognitive work- 12

Trauma work, phobic work, reprocessing, learning new cognitions / beliefs – 15