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**Changing Minds and Mental Development**

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**Introduction**

In my first lecture, I described a brief historical overview of how the mind and Self can be an object of therapeutic intervention. In this talk, I will discuss the ways that different therapies 'work' to change minds; and what this means for mental health services and psychological health more generally. I will draw on the work of esteemed colleagues, especially Professor Peter Fonagy at the UCL psychoanalysis unit, who was my co-author on a paper on a similar theme ( Fonagy & Adshead, 2012); his colleague Professor Anthony Bateman, who has published vitally important papers about therapy for complex disorders; and Professor Jon Allen of the Menninger Clinic Houston, who provided me with academic hospitality and whose published work on therapy for trauma has been hugely influential on many, myself included.

**What goes wrong for people with mental health problems?**

This may seem like a very broad question to address in a brief way; especially when one considers that many big textbooks of psychiatry and psychology exist to answer this question. Although it may seem simplistic, I am going to suggest that there are some common themes that underlie the most common presentations of mental disorder.

Man is a social animal, and needs to be able to live successfully with others in groups. Unlike other primates, humans have language that enables them to maintain relationships with others over time (Aiello & Dunbar 1993), and that language function entails symbolic function: the ability to imagine and represent objects and ideas of importance. In anthropological terms, the human capacity to tell songs and stories has been a vital way for groups of people to live, work and play together. Narratives and stories enable people to tell the story of their experiences and choices; and also to imagine the choices and experiences of others with different perspectives. An inability to tell your own story will alienate you from others, and stop you from imagining how others might see the world.

I am going to suggest that, as a generalisation, mental distress and disorder arises when people fail to be able to tell a coherent story of themselves and others; usually because they have lost their capacity to think about their own minds or those of others. This capacity is called '*mentalising*'; a term known for centuries but only in the last two decades has it been actively utilised to describe a psychological and neurological process that underpins the social mind ( Frith, 2007.)

With my colleague Professor Peter Fonagy, I have reviewed studies from neuropsychiatry and animal studies to propose a model of how common mental disorders develop and present (Adshead & Fonagy, 2012). We suggested that, from an evolutionary point of view, human beings need to be able to maintain a coherent sense of Self over time; and also need to be able to adjust their Self- functioning in response to stressors or threats from their environment. To have a coherent sense of self across time, it is necessary to be able to tell a story of yourself (McAdams, 1996) that makes sense to you and to others. Your story of yourself includes your thoughts, your moods, your sense of excitement or stress when faced with new challenges, and your ability to test out what is real in the external world and what is not. Different neural networks are involved in the regulation of all these psychological functions; and when they function well, people experience a coherent sense of Self, which they and others recognise.

Professor Fonagy and I have suggested that deficits in mentalising are common in all the major mental disorders that demand attention. There is of course individual variation in severity and resilience; and presentations may vary across cultures and languages. How exactly these failures occur is probably due to a complex interaction of genetic vulnerability and adverse environmental experience, especially in the early years of life when regulatory neural systems are being developed.

**Defences against distress**

As mammals, we live in a stressful world. Although unlike much smaller mammals, we do not fear being eaten all the time, we do fear many other things: including our deaths. We also fear the loss of loved ones and we fear the unknown. There are real stresses that come from close relationships with others; and we may also be distressed by the day to day activities of our left brain, which is constantly categorising, judging and assessing our situation. These judgements can generate painful emotions, so we are in fact animals that can get stressed from internal sources as well as external sources: our own minds can become a sources of threat.

We therefore need to develop defences against distress: whether from outside or inside our sense of self. There are a range of ways we can do this: often divided into internalising and externalising. Put simply, when we internalise, we defend against distress by taking the distress inwards, and avoiding it by feeling it physically rather than mentally. When we externalise, we displace the feelings of distress into the social world, and we rely on the external world to fix it. External solutions to internal distress include such time honoured solutions as alcohol, fighting, smoking, chocolate and blaming other people.

There are better ways than this to manage distress, and people who have good defences against their distress tend to have better mental health over the life span. But very few humans will get through life without a major stressor of some sort coming along; and pushing those defences to the maximum. If those defences break, the distress is not held: and people 'break down'. There are many studies that have shown that people who have poor mental health have been exposed to a variety of stressors in the previous year; bereavement for example, significantly increases the chance of developing a whole range of major mental illnesses in the year following. (Kaplow & Laine, 2014; Keyes et al 2014).

**Mentalisation: mind in mind (Allen 2006)**

Mentalisation processes are a crucial aspect of affect and distress regulation in humans (Fonagy 2006; Gergely et al 2008). Mentalisation includes a number of linked activities such as the capacity to be aware of one's mental experience, and to be aware that one can be mistaken about perceptions (Allen, Fonagy, & Bateman, 2008). Good quality mentalisation processes are essential for regulating thinking experience, especially at times of distress and especially in social contexts.

All people with mental disorders struggle to maintain good quality mentalising: put another way, their mentalising processes are *dysfunctional.* What this means is that they make thinking errors, such as jumping to conclusions, sticking too rigidly to thoughts instead of allowing them to change; or failing to weigh up conflicting data that might otherwise lead one to challenge thoughts. Some people's mentalising deficits extend to *loss of contact with reality*; such as misperception of stimuli or gross misinterpretation of sense data. There is good evidence that *mood disorders* have a profound effect on mentalising, so that extremes of mood (either depression or mania) can lead to highly disordered thought patterns and failure to mentalise well. People who are *fearful and anxious* also struggle with mentalising: this is clear in people who are anxious, but also in people in *paranoid* states. Some of the dysfunctional beliefs that occur in paranoid people are actually dysfunctional attempts to explain their profound sense of fear and threat.

People with dysfunctional mentalising also experience a dysfunctional sense of Self. It is not unusual for people to present to psychiatrists or psychotherapists saying 'I don't feel like myself'; or for family members to say He's not himself' . People with severe mental disorders, like schizophrenia, may have highly incoherent and disorganised Self-experience: including a range of experiences like feeling that their bodies are disappearing or their minds are being broken into. Other people may experience less severe disorders in terms of reality testing, but experience feelings of emptiness or pain, especially at times of feeling in need of help or uncertain about what may happen next.

Most psychiatric diagnoses focus on the abnormal behaviours that people display when mentalising fails; and confuse the behaviours with the psychopathological problem. However, the behaviours are a secondary problem: for example, a young woman who self-harms when she is anxious or angry is experiencing failure of mentalising when she is aroused or her mood alters. The self-harm is a dysfunctional solution to an internal Self problem; not the primary problem.

**How do therapies work?**

Peter Fonagy and I have suggested ( Fonagy & Adshead, 2012) that psychological therapies 'work' by improving people's capacity to mentalise. This process of change operates on those neural circuits and networks that connect different brain areas in the brain that are involved in thought, arousal and mood regulation. Most of these neural networks and pathways operate by regulatory connections between the orbito-frontal cortex and (a) the limbic system, which processes emotions and (b) the hippocampal system that regulates memory retention and retrieval. These different parts of the brain are known to be involved in Self experience (Uddin et al 2007; Ionta et al 2014; Fossati et al 2014).

**What changes in psychotherapy?**

We suggest that all the therapies that are effective work on some aspect of mentalisation i.e. the capacity to have thoughts about the experience of the self, and others; and to take these seriously. This may be understood as the continuing process of keeping mind in mind, or *mentalisation* (see for a fuller exposition of this position). Alternatively, it may be seen as the strengthening of a complex set of cognitive capacities or *metacognition* ( Lysaker et al 2005).

Key to both these concepts is *an enhanced capacity for accurately appraising (perceiving, encoding, retrieving) the states of one’s own mind and the minds of others*; a kind of calibration process, which can be studied using linguistic analysis of narratives of self and relationships (e.g. Hesse, 2008). Although some writers express scepticism about mentalisation and metacognition as omnibus constructs that are insufficiently nuanced (Choi-Kain & Gunderson, 2008; Holmes, 2005), it is reasonable to hypothesise that different therapies may work in different ways and at different levels of reflective or mentalizing function. For example, some psychoeducational therapies focus on improving basic self-monitoring and awareness of self-states; whereas others (mentalisation based therapy) focus on improving more complex skills, such as making inferences about the intentions of others, and both second and third order thinking.

**The process of change: psychotherapies as environmental stimuli**

Neuronal development in infancy depends on environmental stimulation. Early studies in animals demonstrated the importance of early external stimuli for the functional development of perceptual systems. Later animal studies demonstrated the importance of social environments (i.e. inputs from carers or peers) in the development of neuronal cytoarchitecture; and how early social deprivation damages the development of neural networks in the parts of the brain that regulate social function (Kraemer, 1992).

Kandel’s original work demonstrated the effect of learning new information on gene expression for proteins active at neuronal synapses involved in hippocampal networks. Similar studies have examined how hippocampal gene expression is affected by childhood experience of stress and medication (e.g. Szyf, McGowan, & Meaney, 2008). There is evidence from both animal and human studies that the expression of a gene affecting arousal regulation is directly affected by the caregiving environment in which the affected individual is raised (Barr et al., 2004; Caspi & Moffitt, 2006).

Other research suggests a direct effect of external stimuli on brain plasticity. Early experience of pain affects the sensitivity of children to pain, suggesting that early stress experience fundamentally alters the rate of firing of pain neurones in a way which persists over time (Hermann et al, 2006). Repeated fear and pain experiences affect the development of the neuro-architecture of the right orbito-frontal cortex; the neurohumoral stress responses to pain alter the rate and degree of arborisation and dendritisation of developing neurones, affecting the organisation of neuronal networks. Such pathological disorganisation persist into adulthood, resulting in affective dysregulation and executive feedback to the limbic system ( Schore, 1996, 2001).

In adulthood, pain responses can be altered by external perceptual stimuli such as reassuring words or visualising images that by a learning process induce the expectation that pain will be reduced (Benedetti et al,2005; Colloca et al, 2008). Such studies of the effect of learning on subjective pain experience are consistent with Ramachandran’s work on the relief of phantom limb pain. By presenting images of the unaffected limb to the brain on a repeated basis, patients can alter their neural maps of how the affected limb is represented in the brain. The way they ‘see’ their limb in their internal world can be altered by repeated learning tasks; which (presumably by new gene expression) facilitates the development of new neural growth in the brain.

Doidge (2008) speculates that in the talking therapies, the patient is either (a) repeatedly presented with new verbal images of himself in relationships, or (b) learns new information about images from non-verbal implicit memory systems which have been transferred into verbal explicit systems during the process of therapy. This new information acts as a stimulus to gene expression of protein synthesis which allows for new synaptic connections to be made, which then results in a change to associated neural networks.

 **‘Changing your mind’: psychotherapy, attachment and improved mentalisation**

Psychotherapeutic techniques are effective because they change both minds and brains. We believe that the talking therapies exercise their therapeutic effects via their benign impact on mentalization (Allen et al., 2008). Psychotherapy across a range of modalities attempts to enhance mentalisation, in part by activating an attachment context which in humans (as we have seen) provides the relational basis for finding out about minds: our own minds as well as those of benign others.

Consider a person in distress who starts in group therapy. First she will need to make an attachment to the group so that she can establish the type of trust that enables her to learn new information (Glenn 1987). She will use both the reflective process and the cognitive review process in group therapy to do a number of mentalising tasks. These tasks may utilise both conscious and unconscious cognitive systems. Once attached, she identifies her self-experience, and then names and considers both feelings and thought. Next, new information from the environment stimulates new thoughts and experiences; and any temporary related affective distress is validated, supported and explored. The patient considers both her own conscious intentions and those of others; but also is invited to reflect on parts of her mind that she cannot see, but others can. In this way, she is able to take a different perspective on her own distress, which gives her options in terms of her interpersonal function.

At the same time, neural networks are being activated in different ways as new information comes in about the world of the patient. Her attachment system is stimulated as she seeks help, activating stress response systems in the amygdala and HPA axis. As she considers a different symbolic perspective, different parts of the brain are activated as she listens to words, appraises them and articulates them, even silently using inner speech. She may now 'see' another way of thinking about her situation, which decentres the previous appraisal from its fixed position. Even if she cognitively and consciously rejects what is put to her, she cannot now un-hear what has been said or un-see the difference. A process of change has begun in the brain. Interestingly the process of neuronal change is different for psychological therapies than it is for pharmacological agents such as antidepressants (Goldapple et al 2004).

There are a number of ways in which the therapist offers assistance with mentalising. First, the therapist helps with the patient’s regulation of affect; most often through contingent marked responding to the patient’s affect and by creating a safe and sensitive interpersonal environment (Gergely, 2007). Next, the therapist explicitly creates alternative perspectives on mental experience in the context of the therapeutic encounter, whether by interpreting the transference or while recovering from misunderstandings or ruptures of the therapeutic alliance. In general, the therapist has the overarching goal of generating a safe and sensitive interpersonal environment that assists with the patient’s regulation of affect.

Psychotherapy entails intense thinking about feelings, thoughts and beliefs **in the context of attachment**. The activation of attachment feelings creates a brain state that removes the dominance of constraints on present from the past (long-term memory) and creates the possibility of re-thinking and re-configuring intersubjective relationship networks. In some treatments, the therapist explicitly encourages the patient to develop an attachment bond to the therapist, or the therapy programme. Although this may be hardly necessary for some patients, other patients may struggle to engage with therapy, and avoid treatment and the attachment entailed (Tyrer et al 2003; Dozier et al 2001). Attachment within therapy is usually achieved through language, conversation and predictable and consistent behaviour within agreed boundaries. The discrepancy of power between therapist and patient also stirs up attachment systems, because the patient is vulnerable and in need, and the therapist is identified as a professional caregiver. In the context of group therapy the therapist may also attempt to engender attachment bonds between members of the group, and to the group as a whole (Glenn, 1987).

**All psychological therapies enhance mentalisation: schools and techniques**

There are a confusing range of psychological therapies, most of which seem to have a three letter eponym. However, the best evidence to date suggests that the different schools and techniques of therapy are more similar than different in terms of aims and outcomes. Although the process by which they operate may be different, and the therapist may be more or less active; nevertheless, most therapies emphasise connecting feelings with thoughts, and the development of a capacity for metacognition or reflective function. As stated above, many people who suffer mental distress have either (a) lost their capacity to think when they are having strong and uncomfortable feelings (such as anger or sadness or (b) have lost awareness of the feelings they are expressing or (c) have externalized their feelings, and upset or alienated others in so doing.

Addressing imbalances in all the components of mentalizing may be a general characteristic of different psychotherapeutic modalities. For example, the therapist may work to move the patient from implicit - automatic mentalization to explicit – controlled mentalization by challenging automatic assumptions made by the patient. This technique is as common in CBT as in the dynamic therapies.

Psychotherapists across all orientations commonly work to elaborate the patient’s internal representations of their own and other people’s mental states. They might do this by ‘casually’ challenging superficial judgements about people based on ‘appearances’ made by the patient or pursuing ‘the meaning’ of such assumptions in the context of a more reflective, psychoanalytic treatment. *Differentiating self and other in psychotherapy* is an important goal, because so much human distress is caused when people cannot tell when their self-boundary ends and another begins. The patient in treatment is trying to find themselves in the mind of the therapist, to achieve the ‘re-calibration’ of internal experience we referred to above.

All *cognitive therapies* employ techniques that encourage learning by restructuring dysfunctional thought patterns, and enhance basic self-reflective skills such as second order thinking and naming of thoughts. For example, in drawing attention to automatic negative thoughts and their influence on mood, the therapist does more than address the named maladaptive processes. She also enhances the patient’s awareness of how their mind works. Similarly, reflecting on habitual thought patterns involves mental elaboration—making what had been preconscious now functionally fully conscious. Even the most behavioural features of cognitive therapy such as taking an empirical attitude toward the validity of one’s thoughts and challenging global negative thinking, in addition to addressing these dysfunctional features, promote curiosity, inquisitiveness and flexibility in thinking.

*Mindfulness training* (Brown & Ryan, 2003; Lynch, Chapman, Rosenthal, Kuo, & Linehan, 2006; Segal, Williams, & Teasdale, 2002; Teasdale et al., 2000) explicitly aims to enhance people's capacity to be aware of present moment mental experience in a non-judgemental way. Enhancing awareness of thoughts as events that are constantly changing can lead to a change in people's relationships with their painful thoughts and feelings, and the ways they think about their own mind generally, not just the content of the thought. Mindfulness training enhances awareness of thoughts and feelings and promotes a mentalising stance by drawing attention to the unceasing flux in mental states. Mindfulness training is highly effective in preventing relapse in depression; those skilled in these techniques have altered ROFC function compared to those who are untrained (Davidson et al 2003).

Interpersonal psychotherapy (IPT:(e.g. Markowitz, Bleiberg, Pessin, & Skodol, 2007; Mufson, Weissman, Moreau, & Garfinkel, 1999) implicitly draws attention to mentalising in relation to others’ mental states while also promoting self-awareness with an eye to interpersonal problem-solving in the here and now. IPT therapists promote mentalising by encouraging the expression of affect to help patients understand, regulate & express their feelings, extensive use of clarification of interpersonal experience which in its turn often includes communication analysis and the use of the therapeutic relationship for identifying such problems.

The *client centred approach* to therapy is a prototypical mentalisation therapy, as it focuses on understanding and 'seeing' the perspective of the client (i.e. empathy). The inquisitive stance of mentalisation based therapy ( MBT: Allen et al 2008) reflects Rogers’ (1951) recommendation that empathic comments be conveyed tentatively. Beyond this issue of style, client centred therapists work to clarify their client’s position in order to enable them to create congruence and integration of self. In so doing, they will inevitably help the client to develop greater mentalizing capacity.

Classical behaviour therapy involves mentalization explicitly through learning new responses to fear-inducing stimuli. This process changes neuronal structures in the ventral prefrontal cortex and amygdala, which are involved in fear reactions (LeDoux, 1998). Techniques that involve non-verbal or physical interventions probably also engage the brain in learning new meanings, either directly through neural networks in the amygdala or indirectly by improving symbolic function, i.e the translation of affect into cognitive imagery. Naming feelings reduces amygdala activation and therefore changes both synaptic function and the experienced level of distress (Vrticka et al 2008; Costafreda et al 2008).

**Benefits and risks in the psychotherapeutic process**

There is a certain amount of evidence to indicate that effective psychotherapeutic treatment is associated with improvement in mentalization (Levy, Clarkin et al., 2006; Levy, Meehan et al., 2006). Even in severe mental illnesses, such as schizophrenia, psychological therapies that improve basic reflective function lead to improved social performance (Lysaker et al, 2010, 2011).

But from the perspective of the mentalizing model of psychotherapeutic efficacy, the hyperactivation of the attachment system calls for caution. There is good evidence that intense activation of the neuro-behavioral system underpinning attachment is associated with deactivation of arousal and affect regulation systems (Luyten et al., 2009), as well as deactivation of neurocognitive systems likely to generate interpersonal suspicion, i.e. those involved in social cognition or mentalization, including the lateral prefrontal cortex (LPFC), medial prefrontal cortex (MPFC), lateral parietal cortex (LPAC), medial parietal cortex (MPAC), medial temporal lobe (MTL), and rostral anterior cingulated cortex (rACC) (Bartels & Zeki, 2000, 2004; Lieberman, 2007; Mayes, 2000, 2006; Satpute & Lieberman, 2006).

In other words, the process of therapeutic change can be painful and uncomfortable; and there may be unanticipated consequences in terms of effects on other relationships. The change process is not quick and like any medical treatment needs focus and primary attention. There is a sense in which, as Freud said, psychological therapy is like surgery for the mind: the therapist has to use techniques skilfully around unexpected anatomy, and one can never be completely certain what complications there might be. But just like invasive brain surgery, the most successful therapy is a collaborative effort with therapist and patient speaking to each other during the process.

**Conclusion: Improving access to all psychological therapies**

There is clear neuropsychiatric evidence that psychological therapies change the brain and also change minds. It seems likely change comes about through improved mentalising capacities; which people learn through the process of talking about their experiences in the presence of others. In this sense, psychotherapy is like a classroom: what is learnt is not simply informational and cognitive, but is also social and emotional. Every therapy session provides an environment in which the patient is exposed to new perceptual stimuli, making new learning possible. New stimuli include new approaches to monitoring one’s own thoughts and feelings; new verbal formulations of experience; new behavioural responses to fear; or new appraisals of experience encoded in memory.

All psychotherapeutic techniques enhance mentalisation processes to some degree, but different techniques 'work' on different aspects of mentalisation. All patients in mental distress can benefit from psychological therapy; but it is important to use the right technique for the presenting complaint, and regularly to review the patient’s treatment needs. No psychological techniques should be excluded from the therapies available to patients on the basis of the current evidence; and more research is needed about how best to combine different types of technique and in what order. Finally there is more work to be done to understand what the therapist brings to the therapy session; and whether there are people who are naturally skilled therapists, and those who are not.

Changing minds is a social process because there is a significant aspect of our mind that is social rather than purely individual. We are not enclosed boxes of electrical pathways, but much more like plants that organically grow and develop in response to our environments. Psychological therapy is one environment (not the only one) in which people can change their minds.

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