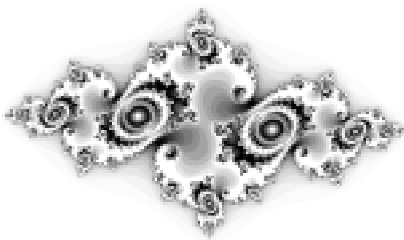
Emergent entanglement, love and being

Michael E Hyland
PhD CPsychol. Professor of Health Psychology, School of Psychology, University of Plymouth



Despite being a scientist, I actually find data collection rather tedious, but I enjoy working with theories. Like everyone else I work on the basis of assumptions: here are mine. First, I believe the whole body functions in part as a complex intelligent system – in contrast to the 'broken part' model of conventional medicine. Second, I suspect that 'magical' processes exist, but that they are probably different from the kind of magical processes proposed by many people working in complementary medicine. 'Magic' simply means a process not explained by the dominant model of science. Non-believers don't like my position because of my tolerance for magic. Believers don't like my position because I am sceptical about their particular kind of magic. Finally, I know I may be wrong but as an optimist I hope and intuitively feel that I may be right.

Summary

It is generally accepted that therapists have effects on patients in addition to the specific effects of their therapy. What is far more controversial is **why** *therapists have the effects they do. This article describes the different explanations and provides some evaluation, and seeks to describe these explanations in a way which is accessible to practitioners and others.*

The phenomenon to be explained

Therapists are able to engender change in patients simply by interacting with them. That is, in addition to *therapy effects*, which include conventional medical treatments as well as complementary interventions such as acupuncture needling and herbal remedies, there are also therapist effects that are not mediated by any specific technique. Sometimes these *therapist effects* are unintended; sometimes, as in the case of healing, they are intentional. Michael Dixon's article in the last issue of this journal[1] reviewed some of the evidence, but there are also other reviews that come to similar conclusions.[2] What explanations are there for these effects?

Conventional psychological explanations

The conventional explanation is that therapists have an effect on patient perceptions, and that the *only* effect of therapists are those mediated through these perceptions. There are several perceptions that appear to be important to outcome.[3] The first, and probably most researched, is the expectation of positive outcome. Patients who expect to get better tend to do so. And if patients have confidence in their therapist, then they are more likely to expect to get better. Second, consulting someone for treatment provides social support, and there is research showing that patients with good social support have better health and conversely that the health of socially isolated people is poor. Third, patients' level of empowerment has a positive effect on health while helplessness is associated with poor health. There may be other perceptions that are important, but there is sufficient research in these three areas to show that conventional psychological theories can explain therapist effects.

Although the validity of these psychological explanations is not

in dispute, there are two questions that remain more contentious. The first is, how do psychological states have an effect on the body? There are several explanations. First, psychological states alter behaviour, and so it may be the new behaviour rather than the state affects outcome. Second, psychological states have direct effects on the body. The hypothetical mechanism of these direct effects might be that a psychological state can affect the body via the endocrine system (eg stressed people produce more adrenaline and corticosteroids which undermine health over the long term); or the possibility that psychological states can directly affect gene expression. It seems fair to conclude, though, that the actual mechanisms for the psychological explanation of therapist effects are not well understood. The second controversial question is whether conventional psychological explanations can explain *all* therapist effects. Many conventional scientists believe they can, whereas proponents of complementary and alternative medicine (CAM) might claim that such explanations are only part of the story. Those who support this view typically believe in *anomalous* phenomena – that is, phenomena that cannot be explained in terms of conventional scientific physiological or psychological theories.

The biofield hypothesis

The biofield hypothesis[4, 5] advanced by proponents of CAM is a concept associated with 'energy medicine'. A recent issue of the *Journal of Alternative and Complementary Medicine*[4] was devoted entirely to energy medicine, and it is reasonable to characterise this as the 'conventional' approach within the CAM community. There are three elements to the biofield hypothesis.

1. Living organisms emit weak electromagnetic signals.
2. Living organisms are sensitive to weak electromagnetic signals.
3. These signals act therapeutically when a 'healer' heals a patient.

The theory is less precise about what constitutes a healer, but the implication is that there are special people who have the ability to heal. The theory is also less precise about exactly how these electromagnetic signals have a healing effect, other than suggesting that there is some kind of 'entrainment' between the patient's and therapist's electromagnetic waves. In effect this means that the therapist is sensitive to signals being emitted by the patient, and the patient is sensitive to a 'corrective signal' that is being emitted by the therapist. Exactly how this entrainment and corrective signal works is unclear, but in homeopathy at least there is an assumption that the corrective signal provided by the homeopathic remedy has to be an accurate reflection of the patient's health problem.

Evaluation of the evidence for biofield hypothesis can lead either to positive or negative conclusions. First, the assertion that humans emit and are sensitive to electromagnetic radiation is true in the sense that it is supported by research in conventional science. However, the level of emission is very small and many orders of magnitude less than the earth's magnetic field. Further, there is only clear evidence of electromagnetic sensitivity at the micro level (ie cellular level). There is no clear evidence that this subtle level of electromagnetic radiation is used as a form of signalling between humans, nor that it can explain healing at the macro level. In addition, electromagnetic radiation attenuates rapidly with distance, suggesting that healers – if their effectiveness depended on such weak signals – would have to be close, if not in physical contact, to have an effect. Nevertheless the idea of being able to emit an unknown form of energy and so heal people is intuitively appealing to many practitioners. Furthermore feelings and sensations of some kind of energy transfer are often reported by healers.[6]

Generalised entanglement

Quantum entanglement is an established phenomenon in quantum physics where observation of one part of an entangled system has instantaneous and non-local effects on other parts of that system. In simple terms, if one observes one of a pair of randomly entangled particles, then the act of observation determines the state of the other particle.[7] Quantum entanglement is the logical consequence of one of the (counter-intuitive)

assumptions of quantum physics: that at the sub-atomic level reality depends on how it is observed.

Generalised entanglement is a new theory deriving from weak quantum theory.[8] Weak quantum theory – which allows some of the requirements of quantum theory to be relaxed – predicts that entanglement occurs not only at the sub-atomic level, but also in large-scale systems under specific circumstances, called complementarity.[9, 10] According to this hypothesis, the therapist affects the patient because of non-local connection between the therapist and patient whereby information is transferred, but without information being carried through the transfer of energy. Non-locality, which implies a connection that is not limited by space and time, is one of the counter-intuitive consequences of the mathematics of quantum theory. The transfer of information has parallels with the biofield hypothesis in that it is assumed that some kind of 'corrective information' is provided by the therapist to the patient. However, whereas quantum theory has substantial experimental support, weak quantum theory does not, and the idea of generalised entanglement is at the moment rather speculative.

There are two crucial features of the generalised entanglement hypothesis. The first is that as a non-local process it can explain anomalous phenomena such as distant healing (for which there is some controversial support from scientific studies). The idea of entanglement avoids the problem of attenuation of signal with distance which is implicit in the biofield hypothesis. The second is that rather like the biofield hypothesis it assumes that healing is mediated through the transfer of specific information that 'corrects' the patient, and that the body is sensitive to weak energy fields, particularly at critical points.

Although there is no empirical support for generalised entanglement (in contrast to quantum entanglement) the idea is attractive in that it provides a different perspective on how people affect each other, and provides a way of integrating several different kinds of anomalous phenomena such as ESP, healing and premonitions. It is worth noting that the idea that quantum-level phenomena are relevant to healing has been suggested for many years, but the hypothesis of generalised entanglement is distinct in suggesting a non-energy based transfer of information.

Emergent entanglement theory

The emergent entanglement hypothesis[11] does not assume the truth of weak quantum theory, nor does it assume the existence of generalised entanglement. Instead, emergent entanglement assumes only the already established existence of quantum entanglement. However, there is one additional assumption which is that in the complexity of living organisms, an emergent property arises because of quantum entanglement, and that this emergent property allows non-local connectivity within and between macroscopic systems. It is generally accepted that emergent properties can arise from complex systems and that these properties cannot be inferred from examining the parts of the system in isolation. The Nobel prize winner, RW Sperry suggested that mind was an emergent property of the body.[12] Thus, the idea of entanglement as an emergent phenomenon shares the idea that complex properties emerge from the complexity of being human. The idea of emergent entanglement has parallels with the metaphor of a universal mind and Jung's concept phenomenon of synchronicity, ie that non-local connections can sometimes manifest themselves.

Emergent entanglement theory (in its most representative form) suggests that healers do not send a 'corrective signal' to the patient. Instead it proposes that the therapist adopts an observational mode that helps entanglement manifest itself not only for therapist but also for the patient. Note that a crucial part of quantum theory is that reality depends on the way it is observed. So the therapist is helping create a reality which is shared by the patient and therapist and this reality, which involves increased non-local connectivity between the patient and the total context in which the patient is placed, has effects on health.

How does emergent entanglement heal? The theory assumes that entanglement is a healthy state because it facilitates effective self-organisation within the body. Thus, the person who is prone to entangled states is less likely to become ill, and is

© Journal of holistic healthcare

also better able to heal. Entanglement can be achieved spontaneously by the patient. For example, there are certain activities (meditation, art therapy, dance therapy) that help develop the observational mode that connects a person with the world in which they live. However, the person's non-local connection with the world, ie their entanglement with the world, can also be enhanced by the therapist because the therapist is part of the patient's context – if the patient wants it. Under these circumstances, the therapist is helping the patient entangle with a system (or to re-entangle if earlier entanglement was lost by lifestyle) and it is the system itself that is having a corrective action, not some signal from the therapist. The system that the patient entangles with is left comparatively undefined, but it includes 'something' that is an addition to and 'greater than' the therapist and patient, and of which both are a part.

There are two crucial features of the emergent entanglement hypothesis. First, like the generalised entanglement hypothesis it suggests a non-local mechanism. Second, it does not assume the existence of a corrective signal or corrective information between therapist and patient. Instead it assumes that particular states of mind help entanglement to manifest itself for the patient and so allow the patient to self-heal.

Comparisons between the four explanations: the patient and therapist

The four different explanations differ with regard to the roles of patient and therapist in the healing process.

In the case of the biofield hypothesis and generalised entanglement hypothesis, it is the therapist who is the active agent. In both cases it is the therapist who provides a corrective signal to the patient. Thus, the therapist's ability (more or less unconsciously) to determine and transmit an appropriate signal or information is crucial. In the case of the biofield hypothesis, the idea of entrainment suggests that the therapist is sensitive to the patient's signals, but that the patient is otherwise passive. By contrast, entanglement is viewed as a mutual process; so although the patient does not generate a corrective signal, in the case of generalised entanglement the patient is contributing to the state of entanglement which then allows the therapist to provide the corrective signal. Both the biofield and generalised entanglement hypothesis do not specify whether the receiving or transmitting of signals is consciously perceived – it might be but it need not be.

In the case of the other two explanations – the conventional psychological explanation and emergent entanglement – it is the patient who is the prime mover for healing. In the case of conventional behavioural/psychological explanations, the aim is to achieve positive psychological changes in the patient and the means towards it are unimportant. The therapist is important only in that he or she modifies the psychology of the patient, and theoretically the therapist could be devoid of any genuine feeling, providing the patient *feels* loved, *expects* a positive outcome, or becomes more empowered. By contrast, in the case of emergent entanglement the therapist is important only in achieving the entangled state that then allows the patient to heal. However, because emergent entanglement depends on observational state, the relationship between the therapist and patient must be genuine – quantum theory shows reality depends on how it is observed, not on how you pretend to observe it. The observational state needed by the therapist must involve a genuineness which may or may not involve conscious awareness, but if it were conscious is likely to feel like a loving connectivity with the patient and the patient's world. The reason is that the best analogy for emergent entanglement is that it is a state of love with universe, because what the emergent entanglement allows is a form of non-local connectivity with the world.

If there is conscious awareness, then one could characterise the difference between generalised and emergent entanglement thus: generalised entanglement would feel like a loving connection between the patient and therapist (perhaps no different from the psychoanalyst's account of positive transference); emergent entanglement would entail feelings of a loving connection involving the patient, therapist and universe. In the case of emergent entanglement, if that entangled

state is achieved by both therapist and patient, whether or not there is awareness of the state, then the patient self-heals without the need for the therapist to 'correct' what is wrong in the patient.

The two versions of the entanglement hypothesis are similar in assuming that patient and therapist both contribute to the state of entanglement. It has also been suggested that certain personality characteristics, investigated elsewhere in psychology under the heading of 'absorption' (eg the ability to become absorbed when looking at a sunset), lead to 'entanglement proneness' and that entanglement proneness on the part of both patient and therapist makes good therapeutic outcome more likely, and this is a testable hypothesis. Entanglement proneness might also be associated with the ability to love (also testable). By contrast the biofield hypothesis makes no prediction about the patient characteristics that enhance therapeutic outcome, and no predictors of therapist effectiveness other than that the therapist must be able to detect and generate energy fields. Finally, behavioural/psychological explanations suggest a number of factors that might be associated with good outcome. For example, the therapist's ability to convince the patient of a positive outcome, the patient's willingness to believe in a positive outcome, the ability of the therapist to empathise or empower the patient and the patient's ability to respond to such empathic or empowering signals. Although each of these abilities could be learned, the research literature also suggests that authenticity and positive regard are perhaps the most crucial factors in determining the effectiveness of psychotherapy.

The four explanations can be summarised in the following way that characterises their unique characteristics.

- **Psychological mechanisms:** getting the patient to be positive about themselves and their illness using any practical means (including genuine caring and a capacity to empathise, providing hope, providing coping strategies).
- **Biofield:** detecting the energy field of patients and correcting unhealthy signals.
- **Generalised entanglement:** entangling with the patient so as to be able to identify and provide non-local information to the patient which then heals the patient.
- **Emergent entanglement:** being in a state that enhances the patient's ability to entangle with the world so that the patient can self-heal.

Some conclusions and empirical tests

This paper sets out the basic features of emergent entanglement theory, contrasting it with other alternative theories. Emergent entanglement theory is radically different from other theories in one fundamental way in that it suggests that 'being' is sufficient for healing. The other theories suggest that healing involves 'doing'. Thus, emergent entanglement suggests that if a person is with another in a particular type of loving relationship, then simply by being part of the patient's world is sufficient for healing. You do not heal the patient by sending specific corrective signals; just being in a therapeutic relationship is enough, because the therapeutic intent is part of the world with which the patient entangles. Of course, some people will be better than others at 'being' with patients, and those more entangled-prone people are likely to be better therapists.

Like all new theories, it is important to find tests that might provide evidence for or against the theory. There is one interesting prediction from both versions of the entanglement theories: it is that different complementary and alternative medicine therapies should be roughly equivalent in terms of their effectiveness, but there should be major differences between therapists. That is, there is a prediction that inter-therapist differences should be much greater than inter-therapy differences. This prediction is controversial because many CAM therapists believe that the specific aspect of the therapy is important, rather than some common factor (eg entanglement) that is common to all therapists, and which should include, for example, psychotherapists. Certainly, the idea that therapists are more important than therapies is a testable idea and if shown true would question the assumptions under which much of CAM functions.

The prediction of large inter-therapist differences characterises both versions of entanglement, so in

this presentation of emergent entanglement it is necessary to find a test that distinguishes generalised from emergent entanglement. A distinguishing feature is that emergent entanglement suggests that the context is crucial for outcome. Thus, not only are the therapist and patient important to achieve entangled states (a prediction also of generalised entanglement theory) but other contextual factors can also be important. Thus, the setting in which the therapy takes place, the patient's family members and even the receptionist may interact with the patient. That is, if the therapist is generally ineffective, other contextual factors should have little effect on outcome. But if the therapist is effective then there should be considerable sensitivity to contextual factors. The idea of looking at the effect of contextual factors is again counter-intuitive from the traditional CAM perspective of trying to establish the efficacy of the specific aspect of the CAM, so an examination of therapists or contexts would be novel to this area.

One of these predictions, the prediction of large therapist- and small therapy-effects, is also predicted by one theory of psychotherapy, known as the common factors model, which suggests that psychotherapy is effective not because of the specific aspects of therapy but due to factors that are common to all psychotherapy. The data very clearly supports the common factors model despite the common belief, for example, that cognitive behavioural therapy is better than other types of psychotherapy (data does not support that view).[13] However, the psychological theories and emergent entanglement theories do make different predictions about the kind of therapist who is likely to be effective. The prediction that absorption is related to outcome is specific to entanglement theory (both versions) as is genuine love in contrast to simulated love. In addition, emergent entanglement theory, but not generalised entanglement theory, makes the prediction that contextual factors which both patient and therapist are unaware of can have an effect. Consequently, experimental manipulation of unseen contextual factors may be one way of evaluating emergent entanglement theory. Further modelling of the different theories will, hopefully, lead to other avenues for empirical investigation.

In summary, emergent entanglement is a new way of thinking about what happens when therapy takes place in CAM. It is the idea that the therapist helps the patient connect with the world in a way which, ideally, we should all be connected; that is, in a loving bond with the world. At the moment it is simply a theory that will have more or less of an appeal depending on the reader's prior assumptions. Whether it is true or useful remains to be seen.

References

1 Dixon M. The human effect. *Journal of Holistic Healthcare 2004*; 1, 1: 10–14.

2 DiBlasi Z, Harkness E, Ernst E, Georgiou A and Kleijnen J. Influence of context effects on health outcomes: a systematic review. *Lancet 2001*; 357: 757–762.

3 Hyland ME. Using the placebo response in clinical practice. *Clinical Medicine 2003*; 3: 347–350.

4 Rein G. Bioinformation within the biofield: beyond bioelectromagnetics. *Journal of Alternative and Complementary Medicine 2004*; 10:59–68.

5 Rubik B. The biofield hypothesis: its biophysical basis and role in medicine. *Journal of Alternative and Complementary Medicine 2002*; 8: 703–717.

6 Cooperstein MA. The phenomenology of paranormal healing practices. In: WB Jonas & CC Crawford (eds) Healing, intention and energy medicine. Edinburgh: Churchill Livingstone, 2003.

7 Nielsen MA. Rules for a complex quantum world. *Scientific American 2002*; 258: 49–55.

8 Atmanspacher H, Römer H, Walach H. Weak quantum theory: Complementarity and entanglement in physics and beyond. *Foundations of Physics 2002*; 32: 379–406.

9 Walach H. Entanglement model of homeopathy as an example of generalized entanglement predicted by weak quantum theory. *Forschende Komplementärmedizin 2003*; 10: 192–200.

10 Hyland ME. Extended network generalised entanglement theory: therapeutic mechanisms and empirical predictions. *Journal of Alternative and Complementary Medicine 2002*; 9: 919–936.

11 Hyland ME. An exploration of the hypothesis and methodology to test the hypothesis that 'entanglement' occurs between people. Submitted manuscript.

12 Sperry RW. A modified concept of consciousness. *Psychological Review 1969*; 76: 532–536.

13 Wampold BE. The great psychotherapy debate. Mahwall, California: Erlbaum, 2001.