

**Steve Heigham**

explains how an updated understanding of evolutionary theory can put a different perspective on clients' here-and-now distress

# EPIGENETICS, EVOLUTION AND THE MIND



One of the things that inspires me in my work as a counsellor, especially with younger clients, is being able to offer an explanation for their distress and suffering that helps to take away the self-blame and confusion that frequently accompanies it. This is not in a paternalistic, 'I know better than you' way; rather, it's an explanation of why they, as a very modern human, living in a highly complex, developed, cultural world, may find it hard to regulate their feelings and thoughts, and a reassurance that they are far from alone in this.

My hope is that, through understanding this, they may find their suffering more predictable, and be encouraged to empower themselves by working with what their mind and body are telling them, and tapping into their natural, evolved capacities to return to equilibrium.

I find evolutionary psychology and psychiatry helpful and inspiring in answering some of the tough questions about the human condition that bring clients into therapy. Its explanations make explicit that

millions of years of natural selection have shaped the way our minds and emotions work, in sometimes contradictory and conflicting ways. An evolutionary perspective does not claim to have a greater grasp on objectivity and truth, and so does not diminish other therapeutic perspectives. For me, it provides an underpinning rationale for why cognitive, emotional and behavioural therapies can all work on the many varied and different aspects of our evolved psyche.

A small number of individuals have led this field over the past 20 years or so, in particular, Paul Gilbert, with compassion-focused therapy,<sup>1</sup> and Randy Nesse's work on evolutionary medicine and psychiatry.<sup>2</sup> Early theory often focused on differentiating between 'ultimate causes' of common mental health disorders and their more 'proximate' causes, or everyday triggers. Ultimate causes are related to such questions as: why are we, as human beings, so prone to anxiety and depression? What are the evolved adaptive mechanisms on which anxiety and depression are based? Why do these

tend to misfire? Evolutionary explanations to questions such as these, combined with psychotherapeutic approaches such as, for example, CBT and mindfulness, have produced effective therapies for depression and related anxiety conditions that empower the client to better understand and predict their thoughts, feelings and behaviour.<sup>1,2</sup>

## **Misunderstood**

Evolutionary psychology/psychiatry has been criticised as overly simplistic and seeming to imply too much biological determinism, which doesn't fit well with a profession such as counselling that is all about encouraging clients to break free from determining influences and become better at being themselves. This criticism is, in part, due to poor understanding and explanation of evolutionary concepts in education and the media: evolutionary theory is a complex subject. However, new understandings of the different epigenetic mechanisms of inheritance, and transfer of physical and behavioural traits, are helping to bridge



this gap between how evolution is seen to determine generalised behavioural tendencies (genotype level), and how we turn out as an individual (phenotype level).<sup>3</sup> What is also new is that much current research is far more interdisciplinary than in mainstream (non-evolutionary) psychology, with researchers collaborating across anthropology, sociology, evolutionary biology, ethology, epidemiology and primatology. It's an exciting, emerging world that seems to appeal to a younger generation of social scientists.

This collaboration has brought a greater focus on the evolution and action of 'regulatory mechanisms' that control and mediate biological processes, including our emotions and motivations. Much new research has focused on mental disorders as resulting from aberrations in evolved regulatory systems controlling emotion and other behaviour impulses: 'dysregulation' disorders rather than 'random' mental illnesses.<sup>4</sup> For example, anxiety, viewed in this way, is not a disorder but a complex, evolved, behavioural response to real or imagined threats to our wellbeing. But it has evolved on the 'smoke detector' principle: better to have a lot of false positive alarms that are uncomfortable, but only moderately disruptive to our lives, than to miss a very real threat that would bring death and genetic annihilation. Thus, it is the regulation of the anxiety system that is disordered, at least temporarily.

This shift towards seeking 'natural' explanations for mental health conditions brings with it the suggestion of more 'natural' interventions, which are seen as offering the most long-term benefit. Social prescribing fits this model, by which I mean non-drug treatments, such as mindfulness and mindful self-compassion; exercise, particularly in rural or 'green' surroundings; meaningful activity, such as volunteering, giving and helping others, which gives a sense of purpose; physical self-care, such as breathwork, relaxation, massage etc. and developing self-awareness through therapy, both group and individual.

Many of these therapeutic models contain an element of psycho-education, on the grounds that a better understanding of the whole function, normality and course of their dysregulation motivates clients because

they can see the bigger picture, including the evolved tendency to heal and thrive. Researchers in evolutionary psychiatry (and evolutionary medicine) are also trying to provide another way of viewing bio/medical aspects of mental and physical health that suggests less use of directly biological interventions, such as psychoactive drugs, with their frequent risks of dependency and side effects.

### Epigenetics

One area of particular interest to the therapy field is the heritability of mental health disorders. This has historically been a controversial and hotly debated topic. Recent research has begun to show how some conditions, such as autism and schizophrenia, whose aetiology and heritability have been difficult to explain using simple 'Mendelian' principles of genetic heredity, may be more readily explained by epigenetic modification mechanisms that have evolved to give us much greater developmental plasticity.<sup>5</sup> For example, a number of mental health conditions seem to be correlated with lifelong, low-trait empathy, but how this manifests in a person's behaviour will depend on a complex interaction of genetic and epigenetic factors, such as attachment relationships, poverty, population density, migration and family dynamics.<sup>6</sup>

This is also connected to new ideas derived from the social brain hypothesis, which explains that, over the past two million years, selection for greater social competence traits co-evolved with the rapid increase in the size of the human brain, especially in our frontal cortex.<sup>7</sup> Social neuroscience research is now revealing how the expression of empathy depends not only on a person's intrinsic empathetic tendencies, but also on many other traits that regulate it: self-awareness, guilt, shame, group membership and voluntary self-control, for example.<sup>8</sup>

Clients often find it helpful to explore how they feel from this very different perspective, as emotions seem so intensely personal - which, of course, they have evolved to be. We, as a species, have survived and prospered best when we are sensitive to social cues that tell us in a compelling way that we need to change how we behave to maintain crucial social relationships. ▶

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## KEY CONCEPTS IN MODERN EVOLUTIONARY THEORY

This can, however, be overused as a strategy by parents to control their children's behaviour. For instance, in my own experience with one client who was working through her latest, long episode of depression, it seemed to me to be increasingly linked to low self-esteem and a longstanding, deep sense of shame. My dispassionate explanation of the role of shame in mediating social emotions seemed to give her some relief straight away.

I was then able to work with her on freeing her from the overwhelming subjective sensation of shame by reflecting back in sessions how it was occurring at a lower level in her everyday interactions, and in her work. This encouraged her to develop, step by step, a greater tolerance of these feelings. She became able to look back and reappraise how the shame had affected the course of her life and be more at peace with this, and not full of regret. Mindfulness techniques, which she used, and which have been found helpful in many different forms of therapy, may be effective precisely because they encourage a conscious, deliberate freeing of ourselves from the visceral emotional reactions that are more or less hard-wired into our nervous system.

### Life histories

Another area of interest is life history theory. This is an idea originally derived from evolutionary biology, and looks at how we and other species decide which strategies will achieve life's big agendas: growth, survival to reproductive maturity, reproduction, ensuring the survival of our offspring etc. This involves trade-offs between behaviours that pursue different ends: for instance, between personal survival and investing in our offspring. What we find is that natural selection mostly favours reproductive success over the individual's current health or happiness. Seen in this light, it is not surprising that, in some more disadvantaged and unpredictable environments, a 'faster' life history pattern emerges - that is, having children early, and having a lot of children, even though this brings premature ageing and financial problems for the parents. The absence of a father and other adverse childhood circumstances actually bring on earlier menarche in teenage girls.<sup>9,10</sup> It is not just a lifestyle choice, as so often portrayed;

The original theory of evolution proposed that all species of organisms develop through natural selection: random variations increase individual organisms' ability to compete, survive, and reproduce. Our understanding of evolution is now rapidly changing in several ways.<sup>3</sup>

First, mutation is no longer seen as purely random: other elements in the reproductive process (for example, hormones and other micro-organisms) have effects on the genes, turning them on and off and moderating their expression, and this happens in adaptive ways that seem to be non-random.

Second, not all inherited characteristics happen through genetic inheritance; indeed genes are only one factor among many. Other 'epigenetic' factors are becoming more obvious, and these include:

- developmental plasticity - developmental processes where the action of genetic material is sensitive to, and guided by,

environmental influences, such as heat, diet and stress. The consequent genetic adaptations may be inherited and give advantage to the next generations. Further, it now appears that some characteristics can develop more easily than others, producing developmental bias

- niche construction - organisms shape their environment, which influences how selection pressures act on their own survival and that of later generations. Beaver dams are a good example; humans have done this to a far greater extent
- cumulative cultural co-evolution - learning is inherited in various ways, through unconscious pre-disposition as well as the more conscious mechanisms of language, social norms, technology and culture, which themselves influence the further development of more complex neural pathways. The term 'co-evolution' explains how genetic and cultural influences interrelate to bring accelerated evolutionary development to both.

a mechanism is working at a less than conscious level, and is later reinforced by culturally cumulative 'wisdom' (see below).

Life history theory has a wide potential application to a number of other hitherto seemingly intractable public health issues, such as the prevalence of aggression, violence and petty crime among young men. Testosterone, as a neuro-hormone, has evolved through sexual selection: when males of all species have to compete for territory and mates, building reputation is a necessary stage to ensure access to resources, establish coalitions, and seize the best mating opportunities.<sup>11</sup> An evolutionary perspective thus helps to unpack what may be going on at a subconscious level in clients who are behaving in socially unhelpful ways, or are responding to the effects of such behaviours in others.

So, for example, I worked with a young man who had problems with controlling

his impulsive behaviour, including drinking, and had developed a fairly addictive use of Facebook and online porn. He found these drives to impulsive behaviour difficult to integrate into his life, as he felt that they were stronger than his own willpower. However, some psycho-education and a compassionate, psychological explanation of why these reputational, social and sexual drives were so compelling seemed to allow him to step back and be sympathetic to his 'shadow' side, forgive himself, and be better able to integrate his emotions.

### Cultural co-evolution

Following on from perspectives on social evolution, there is growing interest in 'cumulative cultural co-evolution' to explain the human ability and drive to coordinate large-scale group actions. Other species show culturally learned behaviour, but not to a similar level. This is not just of historical

interest: how cultural norms and preferences have evolved gives insight into how we develop cognitive and emotional biases: why, for example, we look to individuals with prestige as models to imitate, as well as our huge need to 'fit in' and follow the latest fashions, both in clothing and in social behaviour.<sup>12</sup> The impact of these influences on individuals, and their aspirations and setbacks, provides much of the content of our work with our clients. With younger clients, this is even more accentuated through their exposure to social media, which increases the social anxieties that are natural to this phase of life.

Similar lines of recent research also show how understanding the evolution of language, as an epigenetic mechanism of evolution,<sup>13</sup> gives insight into how it is both a benefit and problem in mental health. As natural native language users, we tend to assume we can learn to use language to express our internal world and access greater self-knowledge. This is the original theoretical basis of talking therapies. But a more detailed examination of its evolution shows what a messy, inaccurate hotchpotch of gesture, metaphor and sometimes duplicitous interpretation of others' motives and intentions language is, and that it is highly situationally constrained.<sup>14</sup> The growing popularity of embodied psychotherapy is perhaps a good indicator that many in the field see the limitations of language as a therapeutic tool to evoke experiences through which clients must go to gain self-awareness. There are so many things we can't represent and express in words.

A cultural evolutionary understanding of the role of language also helps us understand how social and cultural behavioural norms become internalised through language, and influence our behaviour in ways that affect our mental health. There are many examples: hearing voices; experiencing inner conflict

### Steve Heigham About the author



Steve Heigham is a psychotherapist in private practice and a volunteer counsellor. He is also a lecturer in counselling at University College Weston, and Chair of the BPS Psychotherapy Section. He has an MSc in evolutionary psychology. [www.psychologyoftheevolvedmind.co.uk](http://www.psychologyoftheevolvedmind.co.uk)

between different 'parts' of us that have competing needs and goals; cognitive bias in what we pay most attention to; internal rules, rituals and taboos, developed over millennia, on which we depend to guide us in social situations.

### Conclusion

In my own practice, I use a range of integrative practices with clients, such as Gestalt-type chair work and time-line techniques, to bring to consciousness conflicting aims and life agendas. But evolutionary psychology/psychiatry is not a methodology. Rather, it proposes a dynamic framework that can bring greater understanding of what may be going on at numerous levels for clients experiencing distress. How we intervene depends on our own training, chosen models and experience, but mainly on how we explain to ourselves the psychological and socio-cultural influences that make us and our clients who we are, and what, in all of this, is amenable to change. Above all, for me, an evolutionary perspective brings greater authenticity, congruence and conviction to my attempts to create a relationship with clients where we can figure out together their way forward in life. ■

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