The neuroscience of attachment: implications for psychological therapies
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Summary
Recent advances in attachment-informed relational neuroscience point to possible mechanisms of action of psychological therapies, with implications for effective practice.

Declaration of interest
None.

Keywords
Attachment; psychological therapies; neuroscience.

Relational neuroscience
Social species’ brains do not exist in isolation. Relational neuroscience, a broad term, draws on a range of experiential, neuroendocrine and functional magnetic resonance imaging evidence to illuminate how early key relationships affect the development of brain architecture and functioning. We focus here on aspects relevant to psychological therapies.

Biobehavioural synchrony
In utero and postpartum, mother and baby are physiologically entrained, with patterns of heartbeat, hypothalamic–pituitary–adrenal activation and oxytocin levels mirroring and responding to one another. These form the basis of parental sensitivity, identified by attachment theory’s co-founder Ainsworth as the defining feature of secure attachments. Security—providing parents intuitively know and are rewarded by their infants, skilfully regulating—not controlling nor ignoring—their needs and affects. For insecure caregivers, negative affects in their own children and others evoke rejection and diminished oxytocin reward. Clinical and animal models show that attachment trauma in early life influences the developing brain with long-term psychopathological consequences, including the capacity to care for the next generation—a strong message for clinicians to focus on early life experiences, taking the history of the parents alongside that of the children.

Studies of the physiology of therapist–client attachment are scant, but it is likely that biobehavioural synchrony also plays a significant role in the success of psychotherapy, especially at mutative moments in sessions. Therapists vary widely in their effectiveness; like insecure mothers, they can ‘loom’ intrusively with over-empathic responses or make cuttingly dismissive interpretations, however seemingly accurate. AIP skills include the ability to recognise that threat—including in the consulting room—triggers attachment behaviour and is incompatible with emotional exploration and to co-regulate affective states of hyper- or hypo-arousal.

Sensitive periods
Lorenz’s concept of sensitive periods describes temporal windows in which the young of prosocial species bond with their parents. Bowlby was puzzled that no such clearly defined periods are found in humans. However, recent studies have shown that in both human and other mammalian species there are phases in which infants are especially susceptible to parental influence, when rapid learning takes place and the fear associated with novelty neutralised. In insecure attachment, sensitive periods tend to be disrupted. This is especially salient in disorganised attachment, associated with later psychopathology, in which ineffective self-soothing strategies—self-harm, addictions, eating disorders or dissociative disorders—reflect the absence of a modulating ‘secure base’ presence. In effective psychotherapy, a sensitive period reopens in which the client becomes once more susceptible to support and influence. However, with this goes a degree of regression, the management of which is part of the art of therapy.

The Bayesian brain
Bayes, one of the founders of probability theory, described how when faced with uncertainty—drawing on the default mode network—‘prior’ probabilities are assigned to future events, to be converted to ‘posteriors’ as predictions are updated in the light of experience. Computational psychiatry, past and present, draws on Bayesian ideas to understand psychopathology. The mathematician and psychiatrist Friston extends Bayes’ principle: the brain’s aim, via ‘active inference’, is to reduce ‘surprise’ by converting ‘free’—and

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Psychotherapy faces a situation not unlike Bowlby’s hero Darwin when publishing the *Origin of Species* in 1856. Pre-Mendel, pre-Watson and Crick, Darwin knew nothing of the genetic mechanisms underpinning natural selection. After half a century of psychotherapy and attachment research, contemporary neuroscience opens a window into the fundamental mechanisms of action of psychological therapies, and their necessary translation into training and outcome protocols.

**References**


**Conclusion**

Psychotherapy typically helps people at times of transition. Secure attachment makes the uncertainties of novelty tolerable, resolvable with the help of an attachment figure. In insecure attachment, agency is compromised, while rigid prior probabilities are clung to, either by isolationism or over-dependency. In a longer-term therapeutic relationship, as therapists and clients’ oxytocin systems become entrained, this cross-talks to the dopamine system. The ensuing ‘reward’ – the therapist’s hope and love – opens up the complexity of psychological health in contrast to the simplistic splitting and projection. Revised assumptions become possible; inhibitions of action, feeling and thoughts are lifted.